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THESIS

**JOINT PROFESSIONAL MILITARY EDUCATION
AND ITS EFFECTS ON THE
UNRESTRICTED LINE NAVAL OFFICER CAREER**

by

Daniel J. Walsh

March, 1997

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**JOINT PROFESSIONAL MILITARY EDUCATION
AND ITS EFFECTS ON THE
UNRESTRICTED LINE NAVAL OFFICER CAREER**

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Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

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ABSTRACT

The results of this thesis show Joint Professional Military Education (JPME) has four primary impacts on the Unrestricted Line (URL) Naval officer career. First, JPME is an effective retention tool. Second, almost all URL officers completing JPME do so between the 10 and 22 year points in their career. Third, a URL officer completing any form of JPME prior to the O-5 promotion board does not have a significantly better chance of promoting to O-5; whereas, a URL officer completing resident JPME prior to the O-6 promotion board has a significantly better chance of promoting to O-6 -- except in the case of nonresident JPME, intermediate level Phase I/II, and the equivalents (Federal Executive Fellowships or Foreign Service Colleges). For these three forms of JPME, the effect on promotion is insignificant at all levels. Fourth, unlike JPME, a URL officer completing any form of graduate education prior to the O-5 promotion board has a significantly better chance of promoting to O-5. In contrast, a URL officer completing graduate education after the O-5 promotion board does not have a significantly better chance of promoting to O-6. These results seem to indicate the potential for a critical point in the URL officer career with respect to JPME and graduate education. Combining the proper mix of JPME and graduate education in relation to this point has the potential effect of increasing URL Naval officer career efficiency and effectiveness.

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I. INTRODUCTION

QUALIFICATIONS OF THE NAVAL OFFICER

It is by no means enough that an officer of the Navy should be a capable mariner. He must be that, of course, but also a great deal more. He should be as well a gentleman of liberal education, refined manners, punctilious courtesy, and the nicest sense of personal honour (sic)...

The Naval officer should be familiar with the principles of international law, and the general practice of admiralty jurisprudence, because such knowledge may often, when cruising at a distance from home, be necessary to protect his flag from insult or his crew from imposition or injury in foreign ports.

John Paul Jones

A. BACKGROUND AND OBJECTIVES

The previous quote by John Paul Jones entitled the "Qualifications of the Naval Officer" appears at the beginning of a 1974 Department of Navy (DON) study on officer professional development.¹ The quote symbolizes the fact that Naval officers have always been expected to possess a variety of professional attributes -- both during wartime and peacetime. The manner in which these professional attributes are initially developed and subsequently cultivated over an officer's career is a matter of discussion for that DON study. During its time, a study of its scope and magnitude broke new ground in a number of areas. This thesis, by its very nature, attempts to do something similar. That is, break new ground in an area of research in the DON, which until now has been the subject of very limited quantitative analysis. The particular area in question is Joint Professional Military Education (JPME). This thesis specifically focuses on the

¹ Department of Navy, *Naval Officer Professional Development*, 31 May 1974.

impact that different levels, phases, and sources of JPME have on the Unrestricted Line (URL) Naval officer career.

The Goldwater - Nichols Department of Defense Reorganization Act of 1986 (GNA) mandated the establishment of a cadre of military officers "who are specially trained in and oriented toward joint matters."² This group of joint-specialized officers are aptly known as Joint Specialty Officers (JSO). Subsequent implementation of GNA required the services to develop a system of career management dedicated to the professional development of JSOs, including a sequence of joint education followed by joint training. To this end, the Chairman of the Joint Chiefs of Staff (CJCS) was assigned as coordinating authority for the services concerning Joint Officer Management.³

An integral element of the Joint Officer Management process is a phased approach to joint education. To effectively coordinate joint education, CJCS initially established the Military Education Policy Document (MEPD), which was recently updated and replaced by the Officer Professional Military Education Policy (OPMEP).⁴ The OPMEP provides for a continuum of joint education comprised of educational requirements that build on one another throughout five distinct levels of a career beginning with pre-commissioning and ending at the General/Flag Officer (GFO) level.

² U.S. Congress, *Department of Defense Reorganization Act (Goldwater - Nichols) of 1986*, Public Law 99-433, sec 661 (a), 1 October 1986.

³ Joint Chiefs of Staff, *Joint Officer Management*, JCS Administration Publication 1.2, 30 June 1989.

⁴ Chairman, Joint Chiefs of Staff Instruction 1800.01, *Officer Professional Military Education Policy (OPMEP)*, 1 March 1996.

In the Joint Officer Management process, URL Naval officers comprise a large portion of the Navy JSO population, but not all URL officers are selected to be JSOs. Many more URL officers actually complete some form of JPME than eventually are designated JSOs. In this era of declining defense budgets, it is important to determine how scarce personnel resource investments, such as JPME, impact not only on JSOs, but the entire URL officer population as well. This analysis proposes a method for quantifying the impact of JPME on the URL Naval officer career.

To examine the impact of JPME on the URL officer career, this analysis employs a four step approach. The first step consists of an examination of the JPME process. The second step consists of developing a model of the JPME process, which provides a framework for the third, and probably the most important stage, consisting of quantifying the overall effect of JPME on the URL Naval officer career. The fourth and final step consists of determining any interactive effects between URL requirements -- JPME and graduate education (GRAD ED).

This study seeks to answer three primary research questions. They are: (1) What is the impact of JPME on the URL officer career? (2) Are there any interactive effects between JPME and other forms of human capital investment, such as GRAD ED. and (3) If so, how can the interaction between JPME and GRAD ED be efficiently and effectively managed to ease the pressure of an already overly constrained URL Naval officer career?

B. SCOPE, LIMITATIONS, AND ASSUMPTIONS

To examine the impact of JPME on the URL Naval officer career, this analysis focuses on the promotion outcomes of URL officers appearing before the Lieutenant Commander (O-4), Commander (O-5) and Captain (O-6) promotion boards between fiscal years 1986 and 1994. URL officers posing particular interest to this study are those officers bearing the Surface (1110), Submarine (1120), Pilot (1310) and Naval Flight Officer (1320) Warfare designators as described by the Manual of Navy Officer Manpower and Personnel Classifications (MNOMPC).⁵

This study begins with an examination of cross tabulations of data to initially determine the qualitative characteristics of those URL officers completing JPME. This technique aids in establishing general patterns in behavior of these URL officers, thereby enabling the formulation of inferences of a JPME model developed later in the analysis. In particular, this study identifies officers as having completed JPME by those Service School Codes (SSC) assigned in accordance with the MNOMPC. Additionally, this study uses Joint Additional Qualification Designators (AQD), also found in MNOMPC, to discern Joint JPME Qualifications assigned to the officer upon completing JPME. This final level of classification was undertaken to cross-validate SSCs and Joint AQDs.

This study utilizes three primary measures for determining the impact of JPME on the URL officer career. These measures include completion, retention and promotion. Measurement of the effects of completion and retention on the URL career essentially

⁵ Department of the Navy, *Manual of Navy Officer Manpower and Personnel Classifications*, Volume I, NAVPERS 15839H, Washington, DC, 1 May 1992.

consists of determining when a URL officer completed JPME and whether that same officer stays to the subsequent promotion board. For purposes of this study, JPME is assumed to have a positive effect on retention if after completing an initial phase of JPME, that same URL officer subsequently stays to the next promotion board.

To effectively measure and compare the effects of JPME on promotion across the four warfare communities for the time period in question, a number of multivariate models are developed. Separate promotion models are developed for all officers appearing before the Commander as well as the Captain promotion boards. Variables introduced into each model are intended to adjust for significant variations in behavior across warfare communities as well as for the time period in question.

The previously mentioned models are estimated using the LOGIT nonlinear statistical method. In the final analysis, a "notional person"⁶ technique is used to determine differences between marginal probabilities of promotion resulting from the differing effects of JPME across communities.

C. ORGANIZATION OF THE STUDY

This study is organized into seven chapters. Chapter II begins with an explanation of the Human Capital Theory which is the foundation upon which JPME and GRAD ED are based. This is followed by a description of the JCS Joint Manpower Management

⁶ The "notional person" technique consists of deriving an overall probability of an outcome for an average person from the population. For purposes of this illustration, the outcome used is promotion. This technique allows estimation of a baseline probability (i.e., a "notional person") of promotion. Once established, this baseline makes it possible to determine the marginal effects (i.e., marginal probabilities) on promotion as a result of changing a single variable while keeping all other variables constant -- *ceteris parabis*.

process, particularly the framework of JPME policy. This chapter concludes with a summary of some previous analyses regarding the topic of JPME. Chapter III provides a summary of the four URL officer career paths, and the competing priorities between career-specific milestones considered necessary for promotion. In addition, this chapter provides some insight into Navy organizational culture and how it affects the Navy's approach to JPME. Chapter IV describes the data sets and the methodology used to analyze, model and ultimately determine the effect of JPME on URL officers. This chapter shows patterns of behavior, promotion, retention and selection outcomes of officers actually completing JPME. Chapter VI presents the empirical results of the multivariate LOGIT analyses comparing them across the four URL communities, along with showing some interactive effects between JPME and GRAD ED. Chapter VII provides a summary of results in previous chapters, in addition to providing conclusions and recommendations for further research pursuant to these findings.

II. FRAMEWORK OF JOINT PROFESSIONAL MILITARY EDUCATION

A. INTRODUCTION

This chapter provides an analysis of the current framework of Joint Professional Military Education (JPME). It begins with an introduction of Human Capital Theory,⁷ which establishes a foundation for training and education. Next, it extends this theory to the military setting by drawing comparisons between various human capital investments currently found in the DON. This chapter then continues by contrasting the differences between training and education, followed by an introduction to organizational culture. Finally, it arrives at the CJCS Program of Joint Education (PJE) by way of a brief summary of the historic events leading to development of the current joint manpower management process. This chapter then concludes with a synopsis of the literature relevant to an analysis of JPME. By this method of inspection, this thesis attempts to decompose the JPME process into its various components, allowing closer inspection.

B. HUMAN CAPITAL THEORY

In general, there are four major kinds of labor market investments a worker can choose to undertake during a lifetime: education, training, migration, and search for new jobs.⁸ The same holds true for URL Naval officers. The type of education and training

⁷ For an in depth discussion of Human Capital Theory, this author suggests: Becker, Gary S., *Human Capital*, University of Chicago Press, Chicago, IL, 1993.

⁸ Ehrenberg, Ronald G., *Modern Labor Economics*, Harper Collins College Publishers, New York, 1994.

investments URL officers have the opportunity to undertake during a career generally fit into one of five categories:⁹

1. Leadership training.
2. Advanced training.
3. Graduate education.
4. Professional military education (PME/JPME).
5. Joint training (i.e., joint duty assignment (JDA)).

The 1996 Department of Defense (DOD) Military Manpower Training Report reveals a large portion of the DOD human capital investment dollars are specifically devoted to advanced training, graduate education and PME/JPME for military officers.¹⁰ Although, this report shows the importance the military places on these investments, it is also critical to note, the demand for each of these investments varies depending upon what point a URL Naval officer happens to be at during his/her career.

To draw a basic similarity between these investments and other kinds of investments, economists refer to them as investments in *human capital*. Human Capital is a term that conceptualizes workers as embodying a set of skills that can be "rented out" to employers (Ehrenberg, 1993). In this simplistic relationship, *Human Capital Theory* provides a theoretical foundation for all forms of training and education investments. Human Capital Theory, provides a fundamental basis for this analysis.

⁹ Department of Defense, *Military Careers*, GPO, Washington, DC, 1994.

¹⁰ Department of Defense, *Military Manpower Training Report (FY 1997)*, Washington, DC, June 1996.

Total wealth within society is considered to be made up of a combination of two types of capital, which are often referred to as human and non-human capital. Human capital includes accumulated investments in such activities as education, job training, and migration, whereas nonhuman capital includes society's stock of land, buildings, and machinery (Ehrenberg, 1993). In other words, human capital can be thought of as intangible wealth, and non-human capital material or tangible wealth. This distinction is used, because tangible wealth is readily apparent; whereas, intangible wealth is not. Even though, human capital is less apparent than non-human in some respects, the earnings from this type of investment are expected to be of a much higher level (Ehrenberg, 1993). Generally speaking, this is true because there are a number of costs and benefits associated with human capital investment decisions. Human capital investment expenditures can be divided into three different cost categories: personal costs, opportunity costs, and psychic costs. Additionally, human capital investment expenditures can be divided into four different benefit categories: increased skill, greater responsibility, increased earnings over a lifetime, and social benefit. This following discussion focuses on each of these categories of human capital investment. Costs will be addressed first.

1. Costs

The first type of cost is personal costs. Personal costs generally take into account those out-of-pocket or direct expenses associated with a decision to invest in human capital. Personal costs generally include, but are not necessarily limited to costs for tuition, books and fees, moving expenses, expenses for job search (i.e., house hunting),

clothing (i.e., uniforms), and time. Take for example, the URL officer who chooses to complete resident JPME. By making this decision, the officer also chooses to incur all personal costs. One alternative to minimize personal cost might be to complete nonresident JPME (correspondence or seminar). If the officer chooses to complete JPME in this manner, the only potential personal cost is time. However, by making a decision not to complete JPME, the URL officer is able to personal costs altogether.

As to be expected with any decision, there are hidden costs. They are referred to as opportunity costs. Opportunity costs consist of the highest possible alternative foregone as a result of making the original investment decision (Ehrenberg, 1993). In the previous section, the URL officer who chose to complete resident JPME also chose to bear the brunt of all personal costs associated with that decision. However, by electing this decision, there is also an associated opportunity cost to be considered. By completing resident JPME, this officer might have foregone an opportunity for an important operational assignment within his/her URL community. In this instance, the operational assignment comprises the highest possible alternative foregone -- the opportunity cost. By deciding to complete resident JPME the officer was unable to complete additional community-specific training, which in the long run might have contributed more to his/her overall warfare proficiency and personal community reputation.

The opposite is also true of an officer who decides to forego JPME in lieu of an important community assignment, only to find that he/she would have been better off by the experience and knowledge gained by completing JPME. This officer could have gained an important advantage when compared to the other officers with respect to

experience and personal reputation within his/her own URL community. However, by electing to stay within the community to gain additional experience, the officer may not necessarily find himself/herself better off. In this case, a decision to complete JPME might otherwise have served that officer better in the long run. Consequently, a decision to stay within the URL community might also have some associated opportunity costs to be considered as well.

There are a number of psychic costs involved with any decision to pursue education. It goes without saying, education can be difficult, even boring at times. The degree of difficulty encountered generally varies from person to person. Some officers are simply able to learn faster than others. Therefore, the manner in which each officer is able to make personal adjustments to maintain pace with the educational process can tend to impose significant psychic costs.

Another psychic cost is found in the job search process, which can also be quite tedious and frustrating. The manner in which a URL officer approaches this process can take a heavy toll on the individual. Associated with any decision to change assignments, is the requirement to alter living circumstances, say goodbye to old friends, become acquainted with new friends, and reorient oneself with the unfamiliar surroundings of a new duty station. Consequently, moving can impose significant psychic costs, especially when borne out over the course of a typical URL career. It's not surprisingly then, that psychic costs weigh heavily into the decision to pursue any kind of educational investment, such as JPME.

2. Benefits

For the URL officer, the decision to invest in human capital can have any number of associated benefits. A list of potential benefits might include: increased skill, greater responsibility, and increased earnings. These benefits comprise what is referred to as the core job dimensions. Changing any one of the core dimensions has the potential of increasing the motivating potential of an individual.¹¹ All of these core job dimensions are very important, because they directly relate to personal job satisfaction. Although the first two benefits of increased skill and greater responsibility prove to be very important, they vary from person to person. As a result, they prove somewhat difficult to quantify. However, promotion in the military serves as a direct measure for each of these core job dimensions. Consequently, it provides a suitable "proxy" for measuring the effect of different forms of human capital investment decisions on the URL officer career.

Calculating benefits over time requires a concept known as discounting. According to (Ehrenberg, 1993), benefits received in the future are worth less now than an equal amount of benefits received today for two reasons. First, if a person plans to consume benefits, that person would probably prefer to consume them as early as possible. Second, if a person plans to invest the monetary benefits rather than use them for consumption, then that person can earn interest on the investment enlarging funds in the future. No matter how a person intends to use benefits, future receipts are discounted to some extent.

¹¹ Bolman, Lee G. and Terrence E. Deal, *Reframing Organizations*, Jossey Bass, San Francisco, CA, 1991.

The present value of a stream of yearly benefits (B) over time (T) can be estimated by using a present value calculation (Ehrenberg, 1993) in the following manner:

$$\text{Present Value (PV)} = \frac{B_1}{(1+r)} + \frac{B_2}{(1+r)^2} + \frac{B_3}{(1+r)^3} + \dots + \frac{B_T}{(1+r)^T} \quad (2.1)$$

In equation 2.1, r represents the interest rate (or discount rate). Providing r remains positive, benefits in the future are progressively discounted. For example, if r is 0.05, benefits payable the first day of a 20 year career would receive a current weight amounting to 38 percent of the weight placed on benefits payable in 20 years ($1.05^{20} = 2.65$; $1/2.65 = 0.38$). In other words, a dollar in 20 years would be valued at 38 cents today. Table 1 illustrates the smaller the r is, the greater the weight placed on future benefits. Table 1 also shows the weight placed on future benefits tends to increase as an officer approaches retirement eligibility age, which in most cases is 20 years.¹²

Table 2.1. Years to Retirement vs Weight of Future Benefits (for different values of r)

YEARS TO RETIREMENT	WEIGHT OF FUTURE BENEFITS (%)		
r	0.03	0.05	0.07
20	55	38	26
15	64	48	36
10	74	61	51
5	86	78	71
0	100	100	100

¹² Rostker, Bernard, (et. al.), *The Defense Officer Personnel Management Act of 1980, A Retrospective Assessment*, RAND (R-4246-FMP), Santa Monica, CA, 1993.

Investing in human capital, such as JPME, is only worthwhile for the individual if the present value of a stream of benefits net of costs is greater than that for another form of human capital. Educational costs, such as those for JPME, are normally incurred over a very short period of time. As a result, these costs can be quite high. For example, in the case of the URL officer who chooses to complete JPME when, in fact, the more conservative decision might have been to stay in his/her community providing additional warfare experience, the opportunity costs are potentially quite high. Hence, the decision to complete any form of human capital investment such as JPME has the potential impact of producing very different streams of earnings over the course of a career -- one stream for one decision and another stream for a completely different decision. Figure 1 illustrates the potential difference between alternative streams.

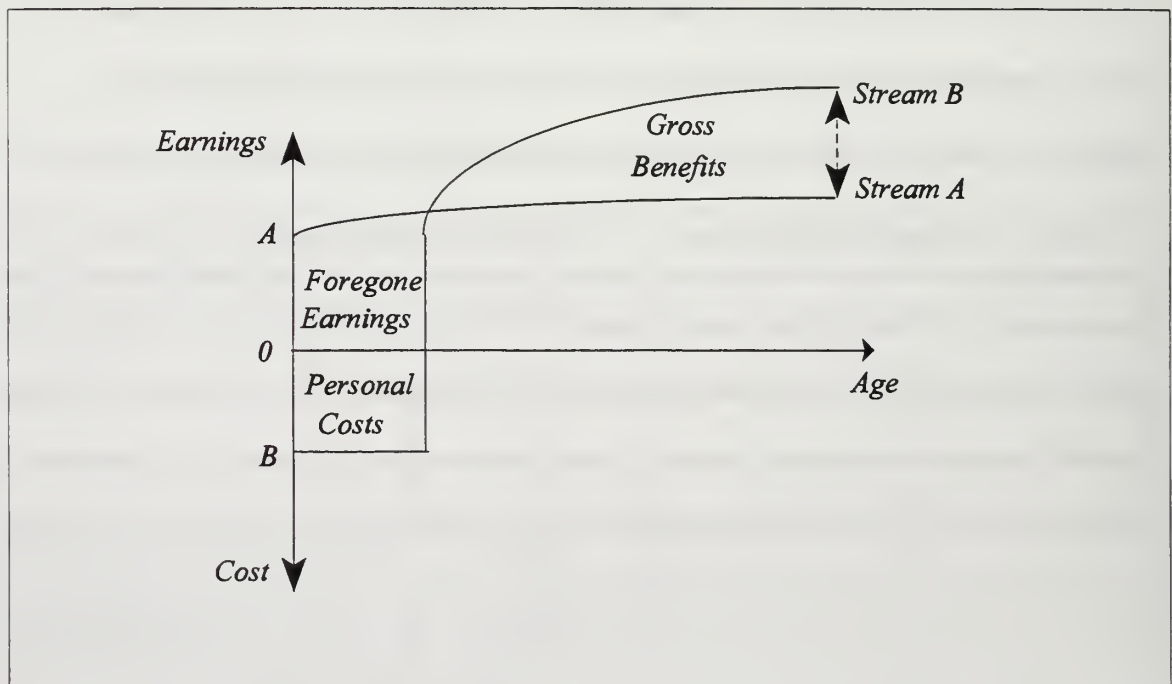


Figure 1. Alternative Earnings Streams. From (Ehrenberg, 1993)."

The dotted line in Figure 1 shows a distinct difference in the earning streams between person A, the officer who chose not to undertake the investment (JPME), and person B, the one who actually did choose the investment (JPME). This concept can also hold true for URL officers trying to make an investment decision between any form of human capital. However, if other costs such as psychic or opportunity costs for that individual are very large compared to personal costs, then the investment might become very expensive compared to alternative decisions. In this case, the person may choose the alternative, which is not to invest.

The preceding discussion highlights that investing in human capital (JPME) is only worthwhile for an individual if the present value of the benefits (monetary and psychic) is at least as large as the costs. In mathematical terms this relationship is expressed in equation (2.2):

$$\frac{B_1}{(1+r)} + \frac{B_2}{(1+r)^2} + \frac{B_3}{(1+r)^3} + \dots + \frac{B_T}{(1+r)^T} \geq C \quad (2.2)$$

In equation (2.2), C represents the total costs of JPME and B the yearly difference in earnings between JPME and non-JPME graduates. This equation represents what is known as a Formal Investment Choice Model (Ehrenberg, 1993). It's doubtful many URL officers resort to as sophisticated a model as the one represented by equation (2.2) when trying to decide whether to invest in JPME. One reason is costs from JPME are front-loaded and don't necessarily require formal discounting. Therefore, it's likely officers make less formal estimates which take into account similar factors. (Ehrenberg, 1993)

mentions four predictions from this model concerning the demand for human capital, which include:

1. Most students will be young.
2. Present-oriented people are less likely to complete education than people who are forward-looking (*ceteris parabis*).
3. Attendance will decrease if the costs rise (*ceteris parabis*).
4. Attendance will increase if the gap between earnings of graduates and non-graduates widens (*ceteris parabis*).

The term *present-oriented* is normally found in a psychological context.

However, in the current context it describes people who do not weigh future events or outcomes very heavily (Ehrenberg, 1993). Obviously, all people discount for future events, depending on the situation some may tend to do this more than others. One extreme case includes the person whose discount rate is so high, that person essentially fails to consider future events altogether. Hence the term *present-oriented*. On the other extreme is the person whose discount rate is so low, that person essentially fails to consider current events altogether. Hence the term *future-oriented*.

As the model indicates, given similar yearly benefits of completing education, younger people have a larger present value of total benefits than older workers simply because they have a longer remaining work life ahead of them (Ehrenberg, 1993). Additionally, (Ehrenberg, 1993) shows medical statistics supporting the model's suggestion of people who have a high propensity to invest in education also engage in other forward-looking behaviors. These two points may help provide answers to two questions: (1) Why do some URL officers tend to invest in human capital more than

others at earlier stages in their careers? and (2) Why do some URL officers tend to invest in human capital more than others all throughout their careers?

Another prediction of the model indicates "human capital investments are more likely when costs are lower" (Ehrenberg, 1993). (DON, 1974) suggests the benefits of GRAD ED and JPME vary throughout the URL career. (DON, 1974) further suggests GRAD ED is a very important factor early on in the URL officer's career. Whereas, (DON, 1974) suggests JPME becomes an important factor at intermediate to later stages of an officer's career, this model along with these statements allows one to draw a relationship between the cost of different forms of human capital during the URL career and to infer the following corollaries. The greater the importance an investment happens to be for a specific point in a career, the higher the opportunity cost of investing in alternative forms of human capital. Alternatively, the lesser the importance an investment happens to be for a specific point in a career, the lower the opportunity cost of investing in alternative forms of human capital. The converse of these two statements can be postulated as well.

The logic of the preceding argument allows this analysis to draw an inverse relationship between the importance of JPME and GRAD ED as a function of timing in the URL career. The difficulty for the URL officer then becomes deciding between forms of human capital investment during a career. Particularly, when it comes to deciding between JPME and GRAD ED. One possible consideration is at what point(s) in the career do JPME and GRAD ED provide maximum benefit to the overall career. This analysis provides a model to aid the URL officer in determining the importance of these

investments during his/her career. In so doing, this analysis explores the possibility of an "offset point" between JPME and GRAD ED in the URL career.

According to (Ehrenberg, 1993), another prediction of human capital theory is "the demand for education is positively related to the increases in lifetime earnings or psychic benefits that a(n)...education allows. This predication relates the potential increase in earnings an officer might expect from a human capital investment.

Admittedly, pay does not differ significantly between officers of the same rank and time in service. However, promotion translates into pay differences. Therefore, URL officers might reasonably expect an added benefit from an investment in human capital when it relates to increased promotion potential. That is, an officer who invests in human capital might be more productive than one who does not. Therefore, that same officer might reasonably expect to have a higher probability of promotion than one who does not. This discussion raises the overall question: What might be a reasonable expectation of promotion from having completed JPME or GRAD ED? The model derived during the course of this analysis provides the URL officer with possible answers to this question.

A previous section of this analysis made a distinction between two types of capital wealth within our society -- human and non-human capital. In as much as human capital is considered intangible wealth, there are elements which actually succeed in providing an indirect benefit. An obvious indirect benefit is a social benefit. The military has long been known as a profession of opportunity. That is, the military is looked upon a part of society where a person, regardless of stature, has an opportunity to obtain training and education, and subsequently advance based on his/her own personal merit. In other

words, the military is considered a virtual meritocracy. Often times, some members of society might not otherwise have been able to invest in training and education had they not been able to join the military. Therefore, the effect of education and training provided by the military is to increase the overall stock of human capital within society. The following illustration attempts to show that the investment in human capital obtained while in the military isn't necessarily limited to the time an officer remains in the military.

When an individual makes a decision to terminate his/her employment with the military, that decision doesn't necessarily signal the end of the human capital investment. Case in point is a URL officer, who after receiving substantial training and education from the military subsequently decides to separate from the service. This same officer is successful in obtaining a position with a firm in direct support of the defense industry. Firms of this type are often referred to in the context of the defense industrial base. Even though the former human capital investment for that officer might have been paid for by the military, the investment is not necessarily considered a total write off. A more favorable way to refer to this investment might be think of it as a shift of resources -- from one area of the defense industrial base to another for its continued effective and efficient use. Seen in a broader social context, military-derived human capital can be considered a renewable investment within society (e.g., military training of pilots and value to commercial airlines).

C. TRAINING VERSUS EDUCATION

At this point in the analysis, it seems appropriate to make a distinction between two forms of human capital -- training and education. Training is defined as "the formal

procedures a company utilizes to facilitate learning so the resultant behavior contributes to the attainment of the company's goals and objectives."¹³ From this definition it is readily apparent training is a human capital investment which provides for the attainment of three types of skills. These skills include: motor, cognitive, and interpersonal. The purpose of training is to achieve some behavioral change to affect an organizational outcome. For training to be effective and transferrable, though, it is recommended it be conducted in a setting closely resembling the work environment (Muchinsky, 1993). In a traditional sense, this means training should be done on-the-job or at a location closely resembling the work place.

Skills provided by training prove to be perishable if they are not utilized immediately and routinely. The most important aspect about training is "the skills training teaches are typically attained for the express purpose of achieving particular goals and objectives, as such many organizations try to keep training "firm specific" so they will not be training people for their competitors" (Muchinsky, 1993). For an organization where goals and objectives change quite rapidly, training provides the most beneficial form of human capital. Consequently, "those people who have the ability to learn quickly are those most likely to seek out, and be presented by employers with, training opportunities" (Ehrenberg, 1993).

In contrast to training, education primarily focuses on developing cognitive skills more than it does on motor or interpersonal skills. Although, in the long run education

¹³ Muchinsky, Paul M., *Psychology Applied to Work*, Brooks and Cole Publishing Company, Pacific Grove, CA, 1993.

may have a profound effect on increased development of these latter skills as well. Education tends to be more broad-based than training, providing a person with the cognitive skills to approach any number of challenges. Therefore, the effects of education may last longer than the effects from training. As a result, education is also capable of taking a person throughout a longer period in life. However, for education to be effective, it must be performed in a setting totally devoid of the work environment. This element is essential, because for education to be effective it should not be interrupted. Father Theodore M. Hesburgh, C.S.C., former President of the University of Notre Dame, sums up the "true educational" experience in the following manner. "Great educational sophistication is needed to perceive where change is essential, so that change may occur in a fruitful and orderly fashion, not just substituting a new for an old disorder."¹⁴

This analysis has shown the effects of training and education on an individual are intended to cause a behavioral change. To achieve organizational goals, behavioral change is often necessary. As the next section will show, individual behaviors translate into organizational behavior, which can be good or bad depending upon the situation.

D. ORGANIZATIONAL CULTURE

The previous section showed that one of the effects of training and education is to produce a change in behavior. In an organizational context, behaviors have a tendency to evolve into what has been described as a culture. One of the more recently identified components of social systems is the concept of organizational culture. According to

¹⁴ Mueller, Thomas J. Ames, Charlotte A., *Fr. Theodore Hesburgh, Commitment, Compassion, Consecration*, Sunday Visitor Publishing, Huntington, IN, 1989.

(Muchinski, 1993), the concept of culture was originally proposed by anthropologists to describe societies, and has been found useful in describing organizations. (Muchinsky, 1993) defines organizational culture as:

- a) a pattern of basic assumptions,
- b) invented, discovered, or developed by a given group,
- c) as it learns to cope with problems of external adaptation and internal integration
- d) that has worked well enough to be considered valid and therefore,
- e) is to be taught to new members of the organization
- f) as the correct way to perceive, think, and feel in relation to those problems.

This definition of culture shows it to be both an asset and a liability. It is an asset when the shared beliefs ease and economize communications, and shared values generate higher levels of cooperation and commitment than otherwise can be possible. It is a liability when the shared beliefs and values are not in keeping with the needs of the organization, its members, other constituents and society. In order to bring about cultural change in an organization it is necessary to change any one of five factors including: behavior, justification of behavior, cultural communications, hiring and socializing, and weeding out.¹⁵ Figure 2 shows a general depiction of how culture perpetuates itself and points at which managers might intervene to change culture within an organization.

¹⁵ Mainiero, Lisa A. and Tromley, Cheryl L, *Developing Managerial Skills in Organizational Behavior*, Prentice Hall, Englewood Cliffs, NJ, 1994.

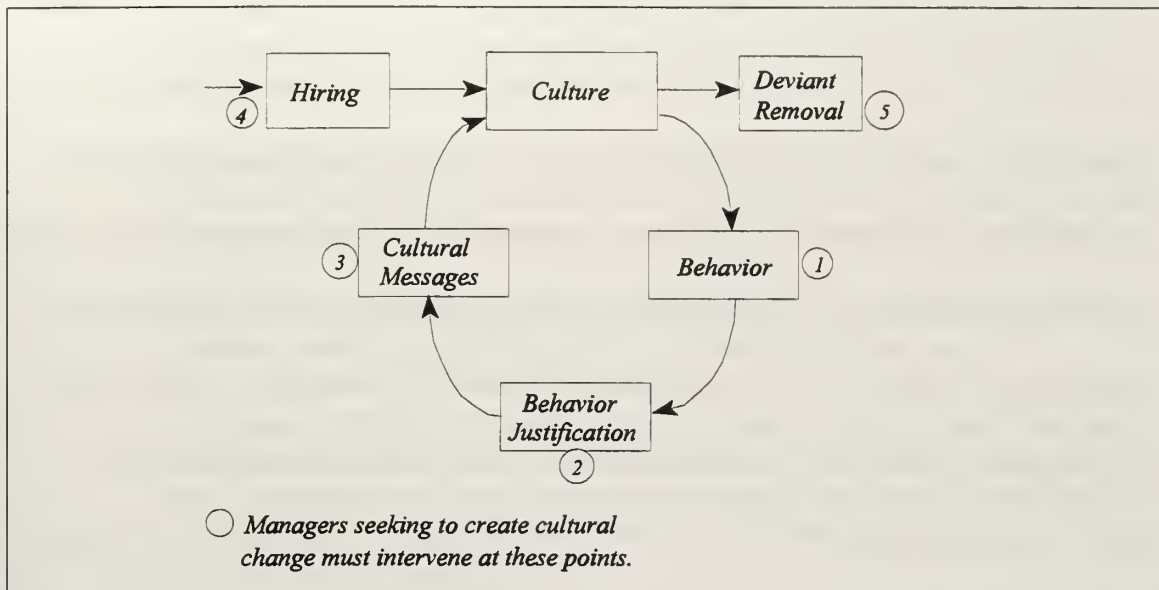


Figure 2. How Culture Perpetuates Itself. From (Bolman, 1991).

E. DEFENSE REORGANIZATION

Figure 2 is highly representative of how military organizational culture has evolved over the years. Seen as dysfunctional by many, prior to 1986, a number of attempts were made to change military culture. However, none proved as effective at changing military culture as the attempt made by members of the ninety-ninth Congress in 1986. This concerted effort, after a number of years, culminated in passage of the Goldwater - Nichols Department of Defense Reorganization Act of 1986 (GNA).

By some, GNA was seen as going too far. Within the services, service chiefs viewed GNA as a frontal attack. From an outsider's perspective many were concerned that by "aligning the military services it might have an adverse affect by making them too

strong."¹⁶ In defense of this point, some went so far as to draw historic parallels between the JCS and German General Staffs under leaders like Graf Von Moltke (the elder). By others, GNA was seen as not going far enough.¹⁷ In spite of the rhetoric, the services were still seen as "parochial" to their own interests. Prior to GNA any one of them could effectively weaken the defense process by simply casting their veto. What was there to stop any one of them from doing that same thing now? Fortunately, as a result of GNA, the Chairman of the Joint Chiefs of Staff (CJCS) didn't need full consensus of the services to move ahead on defense issues. Nevertheless, everyone agreed, GNA meant serious business to service culture -- especially the Navy. The question remained: How would the services react to this cultural change? The following list outlines those principal changes brought about by GNA:

1. Established the Chairman as principal advisor to the President and Secretary of Defense on all military issues, including JPME;
2. Defined "joint matters" as relating to integrated employment of land, sea, and air forces in the areas of national military strategy, strategic and contingency planning, and command and; control of combat operations under unified planning, and command and control of combat operations under unified command;
3. Created a JSO career track to improve the quality and performance of officers assigned to joint duty; mandated that critical positions identified in joint organizations be filled only with JSOs contingent upon completion of JPME;

¹⁶ Previdi, Robert, *Civilian Control Versus Military Rule*, Hippocrene Books, New York, NY, 1988.

¹⁷ Adolph, Robert B. (et. al.), *Why Goldwater - Nichols Didn't Go Far Enough*, Joint Forces Quarterly, GPO, Washington, DC, Spring 1995.

4. Mandated maintaining "rigorous standards" at JPME institutions for educating JSOs, where previously there had been neither joint educational programs nor required standards;
5. Mandated promotion policy objectives for officers in joint duty assignments, objectives directing that as a group these officers should be promoted at a rate comparable to officers serving on service staffs in the military departments.
6. Required newly promoted General and Flag Officers (G/FOs) to attend Capstone course, to prepare them to work with all the services.
7. Designated a JPME focal point in the Vice Director, Operational Plans and Interoperability (J-7), Joint Staff, dual hatted as the Deputy Director, Joint Staff, for Military Education overseeing Military Education Division (J-7).¹⁸

F. JOINT SPECIALTY OFFICER

GNA established the requirement for each service to develop a pool of officers particularly trained in, and oriented toward, joint matters (GNA, 1986). These officers are currently referred to as Joint Specialty Officers (JSO). GNA also mandated the services conceive a system of career management for these JSO's. The resulting JSO career path is outlined in JCS Administration Publication 1.2, and profiles the routes a military officer can follow to successfully achieve the JSO designation. In 1994, the RAND Corporation began a study of Joint Officer Management, and following two years of intense research, completed a three-part analysis of the process.¹⁹ However, this study only focused on one part of the JPME process. Therefore, this thesis has taken and modified the resulting Joint Supportability Model from the RAND study, showing the

¹⁸ Graves, Howard D. and Snider, Don M., *Emergence of the Joint Officer*, Joint Forces Quarterly, GPO, Washington, DC, Autumn 1996.

¹⁹ Harrell, Margaret C. (et. al.), *How Many Can Be Joint? Supporting Joint Duty Assignments*, RAND (MR-593-JS), Santa Monica, CA, 1996.

entire JSO process from start to finish. The resultant model serves as a depiction of the entire JSO process. This modified version of the RAND Joint Supportability Model is shown in Figure 3.

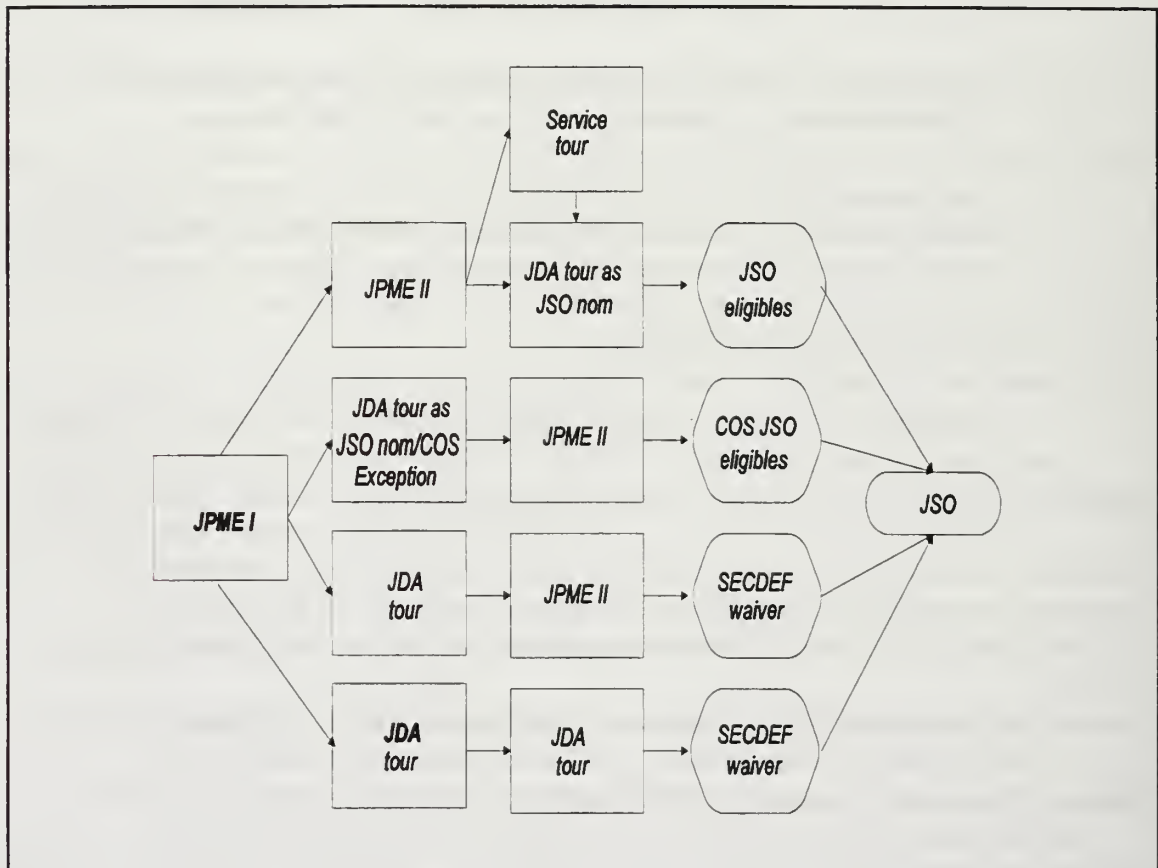


Figure 3. JSO Designation Process. After (Harrell, 1996).

Close inspection of figure 3 reveals some unique characteristics about the JSO designation process. One prominent feature is a two-phased sequence of JPME required for JSO designation. Although, the RAND study was primarily concerned with the second phase of the process, the following quote from the study highlights the issue of JPME as the primary stumbling block for the services in the Joint Supportability Model:

The services may have the officers with the skills required by the Joint Duty Assignment (JDA) billet, but these officers may not have JPME qualifications. This problem has decreased significantly as the services have changed their policies for selecting JPME attendees, who now better reflect the skill requirements of JDA's. It is worth noting, however, that the current JSO population is, to some degree, a reflection of the JPME selection process of several years ago, which was less proactive in selecting attendees with the appropriate skills. JPME continues to pose the most significant factor in the JSO designation process. (Harrell, 1996)

These comments from the RAND study serve to suggest one possible way to improve the overall understanding of the impact of JPME might be by enlarging the focus of future analyses to include a study of the impacts of JPME on all officers electing this form of investment. This thesis succeeds in broadening the scope of the RAND study, ever so slightly, by analyzing the effects of JPME on all URL Naval officers. The following section makes it possible to formulate a basic model of the JPME process with which to analyze the effects of JPME on the URL Naval officer career. It does so by identifying three major distinctions in the current JPME framework, which consist of: level, phase and source of JPME.

G. OFFICER PROFESSIONAL MILITARY EDUCATION POLICY

Joint education is described "as a career-long effort." Therefore, in 1996, CJCS promulgated the Officer Professional Military Education Policy (OPMEP) document (CJCS, 1996). This policy document effectively provided a framework of JPME for all services. A copy of this framework is contained in Appendix A (CJCS, 1996). Close inspection of Appendix A reveals three distinct characteristics, which include: level, phase, and source of JPME.

The first characteristic, level, shows a differentiation between five different military educational levels: pre-commissioning, primary, intermediate, senior, and General/Flag Officer (GFO). Each of these five levels is considered by (CJCS, 1996) to be very important in the professional development of a military officer. The pre-commissioning level is conducted at institutions and through programs currently producing commissioned officers for the services. The primary level is conducted at grades O-1 through O-3. The intermediate level is typically conducted at the grade of O-4; whereas, the senior level is conducted at grades O-5 and/or O-6. The levels of JPME of concern to this analysis consist of the intermediate and senior level. Therefore, for purposes of this thesis, any further discussion of JPME refers to the intermediate and senior levels of (joint) professional military education.

The second characteristic, phase, shows a differentiation in the approach to JPME at both the intermediate and senior levels. Unique to these two levels is a two-phased approach to JPME. With a few minor exceptions, Phase I is primarily conducted at Service schools, and Phase II is conducted at joint schools falling under the cognizance of the National Defense University (NDU). "This two-step approach to JPME provides for an interdependent relationship between the joint and Service schools." (CJCS, 1996)

The third characteristic, source, shows differentiations between the method of delivery of JPME. The following outline provides an summary of the various sources of Intermediate and Senior level JPME currently available today.²⁰

²⁰ For an in depth discussion of these sources this author recommends:
(1) Chairman Joint Chiefs of Staff, Officer Professional Military Education Policy

I. Intermediate level

1. Intermediate level Phase I institutions
 - a. Air Command and Staff College (ACSC)
 - b. Army Command and General Staff College (USACGSC)
 - c. College of Naval Command and Staff (CNCS)
 - d. Marine Corps Command and Staff College (MCCSC)
 - e. Naval Postgraduate School (NPS)
 - f. Service college nonresident programs (seminar and correspondence)
 - g. Equivalent fellowships and foreign military schools²¹
2. Intermediate level Phase II institutions
 - a. Armed Forces Staff College (AFSC) after 1990
3. Intermediate level Phase I / II institutions
 - a. Armed Forces Staff College (AFSC) prior to 1990

(OPMEP), CJCS Instruction 1800.01, GPO, Washington, DC, March 1, 1996.

(2) Koran, John G., *Manpower Management for Joint Specialty Officers: A Comparative Analysis*, Naval Postgraduate School Master's Thesis, Monterey, CA, 1990.

(3) Clark, Edward S., *A Comparative Analysis of Intermediate Service College (ISC) Phase I Joint Professional Military Education (JPME)*, Naval Postgraduate School Master's Thesis, Monterey, CA, March, 1990.

²¹ Intermediate Phase I credit no longer awarded for fellowship completion after 1997.

II. Senior level

1. Senior level Phase I institutions

- a. Air War College (AWC)
- b. Army War College (USAWC)
- c. College of Naval Warfare (CNW)
- d. Marine Corps War College (MCWAR)
- e. Service college nonresident courses (seminar and correspondence)
- f. Equivalent fellowships and foreign military schools²²

2. Senior level Phase II institutions

- a. Armed Forces Staff College (AFSC) after 1990

3. Senior level combined Phase I and Phase II institutions

- a. National War College (NATL)
- b. Industrial College of the Armed Forces (ICAF)

The previous discussion highlights three characteristics of the JPME framework, consisting of level, phase and source. These characteristics serve as the basis of distinction for the JPME model in this analysis. Figure 4 serves to summarize the preceding discussion by grouping these overall characteristics.

²² Senior Phase I credit no longer awarded for fellowship completion after 1999.

LEVEL	INTERMEDIATE		SENIOR	
PHASE	PHASE I	PHASE II	PHASE I	PHASE II
SOURCE	NCSC ACSC USACGSC MCCSC NPS NONRESIDENT FELLOWSHIP FOREIGN	AFSC > 1990	CNW AWC USAWC MCWAR NONRESIDENT FELLOWSHIP FOREIGN	AFSC > 1990
	AFSC < 1990		NATL ICAF	

Figure 4. Levels, Phases, and Sources of JPME.

The CJCS Framework for Joint Professional Military Education (CJCS, 1996) provides the basis for developing a model to aid in determining the impacts of JPME on the URL Naval officer career. The most obvious distinctions in this framework include three dimensions. The first dimension consists of levels of education -- both Intermediate and Senior. The second dimension lying immediately below the first, consists of different phases of JPME. The third dimension lying directly below the second, consists of methods of completion, which include: resident, nonresident (seminar or correspondence), equivalent programs (fellowships and foreign service schools). All these dimensions provide a basic method of classification for the JPME framework, which in turn provides the basic distinctions used to construct the model in this analysis. With these subtle characteristics in mind, Chapter III attempts to address the data and methodology employed in this analysis. The final section of this chapter will provide an overall review of the literature pertaining to this type of analysis of JPME.

H. LITERATURE REVIEW

Until GNA occurred there hadn't been very many studies performed on the topic of JPME. Several of these studies have already been alluded to in this analysis.

However, there are a number of other studies that have not been mentioned. This section provides a brief summary of these additional studies on JPME pertaining to this analysis.

Overall, studies that have been performed on the topic of JPME can be divided into four different categories. These categories include: DOD, Independent Agencies, Other Services, and the Navy studies. This analysis begins with the DOD studies.

1. DOD Studies

Following WWII, the face of military education reflected individual Service needs until 1975, at which time the DOD Committee on Excellence in Education recommended many changes to the existing structure of military education. One significant outcome resulting from that study was the establishment of the National Defense University (NDU) at Fort McNair, Washington, DC. Again, military education remained much the same until 1982, when the CJCS, General David C. Jones chartered a study to improve the organizational process of the JCS system. A significant outcome of this study in 1983 was the first Joint Professional Military Education Policy Document (MEPD). In 1986, GNA became law. GNA prompted a significant increase in the number of studies devoted to reassessing the military educational system. According to the OPMEP (CJCS, 1996), seven major studies have resulted from GNA, These studies include:

1. The Dougherty Board on Senior Military Education (1987) - Focused on a need for increased and improved joint education. Recommended improvements in structure, curriculum content, student ratio and activity of intermediate and senior level Service schools.
2. Rostow-Endicott Assessment on the Teaching of Strategy and Foreign Policy at the Senior War Colleges (1987) - Reinforced importance of educating officers in national security issues.
3. The Morgan Initial Certification Group (1989)- Recommended CJCS curricula validation at 10 intermediate and senior level Service schools for AY 1988 - 1989 with follow-on Phase I accreditation for classes thereafter.
4. National Defense University Transition Planning Committee (1989) - evaluated the need for and feasibility of transforming NDU into a National Center for Strategic Studies.
5. House Armed Services Committee Panel on Military Education (1989) - Established a two-phased system of joint education beginning with education at the Service Schools followed by the Armed Forces Staff College (AFSC).
6. Joint Professional Military Education Review Panel (1994) - Recommended policy changes in officer professional military education resulting in 1996 CJCS Officer Professional Military Education Policy (OPMEP).
7. Joint Vision 2010 - Objective is to provide a conceptual blueprint for preparing the Armed Forces for the 21st century.

The last study, Joint Vision 2010 is a concerted effort on the part of the Joint Staff toward clarifying the future direction of the armed forces for the 21st century. Not one year old yet and already, JV 2010, is providing significant direction for the services. The stated goal of Joint Vision 2010 is:

...to leverage technological advances, integrate new operational concepts, and channel the vitality and innovation of the services to achieve a more seamless and coherent effect on future battlefields. Joint Vision 2010 creates a template for change that will guide the evolution of future joint doctrine, PME, and training. (CJCS, 1996)

It is apparent from this comment that JPME provides the foundation from which to address future issues that might possibly confront the military services. The reason for this reliance on JPME is its ability to provide an officer with an essential understanding of the science and art of war. This overall understanding is vital, given the fact that the military is going through what many refer to as a Revolution in Military Affairs.²³ In (Galdi, 1995), calls this period a revolution because of its characteristic tendencies toward rapidly changing pace of technology and information. Hence, there is a growing demand for a broader understanding of military affairs.

2. Independent Agency Studies

A number of Independent Agency Studies have emerged as a result of findings from these previous DOD studies. One recent study conducted by the RAND Corporation (Harrell, 1996) was undertaken in an effort to determine the feasibility and management of the personnel and education requirements mandated by GNA. This study focused on a number of joint Supportability issues -- one issue happened to be JPME. While the HASC established a two-step approach to JPME, the RAND study chose to primarily focus on the second phase, because according to the RAND Joint Supportability Model Phase II is the choke point in the process. To gather information about JPME, RAND administered a questionnaire to all Joint officers to ascertain whether JPME was effectively preparing them for a joint assignment. Findings from this study reveal that a majority of the officers polled felt JPME effectively prepared them for their assignment.

²³ Galdi, Teodor W., *Revolution in Military Affairs? Competing Concepts, Organizational Responses, Outstanding Issues*, Washington, DC, November 30, 1995.

Another study on the effectiveness of JPME is currently being conducted by the Center for Strategic and International Studies (CSIS). This study is being conducted as an overall review of the professional military educational system, and includes the military academies, the Service Colleges as well as the military graduate schools.²⁴ At time of completion of this thesis, results of the CSIS study were not available for review.

3. Other Service Studies

The other services, primarily the Air Force and the Army, seem to have been the most proactive at conducting analyses pertaining to JPME. A vast majority of the studies found concerning JPME were generated by these two services. The most relevant service studies were completed by Air Force officers. The first of these was a Doctoral Dissertation completed by Major Richard Burroughs, USAF²⁵, which consisted of an analysis of Air Force officer perceptions of the Air Command and Staff College's (ACSC) Nonresident Correspondence Program. The methodology used in this study consisted of analysis of survey results administered to ACSC resident and nonresident attendees. The results of this study show Air Force officers believed resident Service school completion provided a significant contribution to their improved professional development, while correspondence completion did not.

²⁴ Air Force Institute of Technology (AFIT) and Naval Postgraduate School (NPS).

²⁵ Burroughs, Richard, *Perceptions of Air Command and Staff College's Nonresident Correspondence Program*, University of Southern California, Doctoral Thesis, January, 1987.

Another Air Force Officer study by Major Ronald Stevens, USAF²⁶, consisted of an analysis of the effects of intermediate Service school completion on the careers of Air Force Officers. The methodology he used consisted of statistical t-tests to compare for significant differences in means between retention, promotion and selection to command of Air Force officers completing resident intermediate Service schools. This study found significant differences in the method of JPME completion for all three of these measures of effectiveness. This study found those Air Force officers completing resident Service school were more likely to promote to O-5 and O-6, stay in the service, and select for command than those who had done so via nonresident means.

The last Air Force Officer study by Captain James Bruns, USAF²⁷, addressed the impact of non-performance factors on the promotion of Air Force officers to O-4, O-5 and O-6. The methodology used in this analysis consisted of a multivariate LOGIT regression technique to determine those variables providing a significant impact on promotion. Again, this researcher found Air Force Officers completing resident JPME had significantly greater probability of promotion to O-5 and O-6.

²⁶ Stevens, Ronald L., *An Analysis of the Effects of Intermediate Service School Professional Military Education Completion on the Careers of United States Air Force Officers*, Army Command and General Staff College, Fort Leavenworth, KS, 1991.

²⁷ Bruns, James W., *A Comparison of Non-Performance Characteristics with United States Air Force Officer Promotions*, Air Force Institute of Technology, Master's Thesis, Wright Patterson, AFB, OH, September, 1993.

4. Navy Studies

Mentioned earlier, The 1974 Naval Officer Professional Development Study (DON, 1974), broke new ground by establishing seven priorities in Naval officer professional development. The study recommended these seven priorities (DON, 1974):

1. Training for fleet officer personnel.
2. Graduate education in the technical fields to meet minimum requirements; and, professional military education for a select group of Captains and Commanders with the goal of 35 percent of the Captains having had this education.
3. Training for fleet support officer personnel.
4. Graduate education in other areas to meet minimum requirements (in non-technical areas, officers should be strongly encouraged to use nontraditional educational opportunities).
6. Command and staff level professional military education to meet a goal of educating 50 percent of each year group. (Officers who do not have the opportunity to attend the resident course, should be strongly encouraged to enroll in service college nonresident courses).
7. Basic professional military education for about 20 percent of the O-3s.

A number of these (DON, 1974) study recommendations seem to have endured the test of time. Particularly, the relative priorities established between the different forms of human capital investment. The Military Manpower Training Report for FY97 (DOD, 1996) shows fleet training is still the Navy's number one priority followed by the others listed above in descending order. Knowing that these priorities still exist, even today, provides a strong frame of reference from which to base the Navy's philosophical approach to military human capital investment.

Even in 1989 the Navy's response to the House Armed Services Committee Review of Professional Military Education seems to emerge from a similar philosophical base as provided by the 1974 report. The Navy conducted study group examined the recommendations of the Skelton Panel.²⁸ One Panel recommendation stood out in the report, the panel found Navy PME as basically sound, but improvable. One of the recommended areas for improvement consisted of bringing the PME system in line with the mandated layered approach to PME. Specifically noted in this study were the curricula at the College of Naval Command and Staff, the intermediate level course, and the College of Naval Warfare, the senior level course, as being too similar to one another. The panel recommended the Navy distinguish between the two educational levels by changing the focus of the intermediate course to operational art. In response to the report, the Navy has since altered the intermediate level course to reflect recommended changes. However, the nonresident correspondence courses available to both intermediate and senior level officers remains exactly the same to this date.²⁹

Another Navy study was undertaken by the Naval War College to examine the feasibility of granting a Master's Degree in conjunction with completion of the Naval War College. As a result of this study, the Naval War College became the only Service school authorized to grant a Master's Degree. In 1991, The New England Association of Schools

²⁸ DON, *Navy Study Group Report on the Skelton Panel on Military Education*, Washington, DC, November, 1989.

²⁹ U.S. Naval War College, *Nonresident Programs Information Guide*, GPO, Newport, RI, 1996.

and Colleges, Inc. (NEASC) authorized the NWC to grant a Master's Degree in National Security and Strategic Studies for completion of the intermediate and senior level courses. Additionally, the NEASC authorized the NWC to grandfather the degree to all Naval War College graduates dating as far back as 1985. However, today the NWC authority to grant a Master's Degree only extends to resident completion, and does not extend to the College of Continuing Education (CCE) for purposes of nonresident Phase I JPME completion (NWC, 1996). Although, some graduate level credit is awarded for CCE completion.

There may be some hidden costs associated with the decision to accredit the NWC. As the previous paragraph pointed out, the Navy was made to change the intermediate level course. However, the fact that both the intermediate and senior level courses fulfill the same degree requirements leads this author to suspect the two courses may still remain largely the same. Any future changes in the NWC courses may prove to be very difficult, because of the dual constraints imposed on the NWC by both NCEAS and CJCS accreditation policies. Consequently, Navy JPME may not be quite as flexible as it needs to be to change with the future tide of technology.

In response to increasing demands for JPME in the Navy, the Naval Postgraduate School, conducted a feasibility study to determine its ability to provide intermediate level Phase I JPME in conjunction with select curricula. The study determined this proposal to be feasible, however, primarily for the National Security Affairs Department curricula. NPS subsequently applied for Phase I certification of its Joint Education Electives Program (JEEP) through the CJCS Program for Accreditation of Joint Education

(PAJE).³⁰ In December 1995, the JEEP was certified as meeting intermediate level Phase I credit. A follow-on study by the Bureau of Naval Personnel (PERS-2) found the NPS JEEP program to have provided a significant increase in the Navy's annual Phase I JPME production.³¹ NPS statistics show annual production of JEEP graduates receiving Phase I credit during AY-95 and AY-96 increased the Navy's resident Phase I JPME by 11 and 23 percent, respectively.³² Future figures are expected remain at AY-96 levels.

Other JPME related Navy studies include a Master's Thesis by LCDR Peter Kovach, USN.³³ This particular thesis analyzed the differences in quality between URL Naval officers completing JDA's as well as those receiving the JSO designation before and after 1989. His findings showed SWO and NFO officers completing a JDA prior to 1989 had a lower probability of promotion to O-5. Conversely, SWO's completing a JDA after 1 October 1989 had a significantly higher probability of promotion to O-5. He also found the effect of a JDA on promotion to O-6 to be statistically insignificant. The effect of JSO designation on promotion to O-5 was positive for SWOs and NFOs after 1989. Lastly, he found the effect of JSO designation on promotion to O-6 to be positive for

³⁰ Naval Postgraduate School, *PAJE Self-Study of the NPS "Joint Education Electives Program"*, Monterey, CA, September, 1995.

³¹ Department of Navy, *Advanced Education for the Officer Corps*, Washington, DC, April, 1996.

³² Naval Postgraduate School, *Joint Education Electives Program Briefing*, Monterey, CA, January, 1997.

³³ Kovach, John P., *An Analysis of Naval Officers Serving on Joint Duty: The Impact of the 1986 Goldwater-Nichols Act*, Naval Postgraduate School, Master's Thesis, March, 1996.

SWOs and Pilots. Although, these results do not indicate directly the effects of JPME on promotion, JPME is a prerequisite for a JDA and JSO designation. Even though this study focused on an analysis of JDA completion, the results might actually provide some indirect measures of quality of URL Naval officers selected for JPME.

A final Navy JPME related study was conducted by Dr. William Bowman³⁴ of the U.S. Naval Academy. Although, this study primarily focused on the effects of graduate education, it is the only study conducted thus far which provides any statistical analysis of the effects of Service and Joint Service School completion on promotion of Naval officers. In his analysis, Dr. Bowman divided JPME into three forms: U.S. Service schools, foreign Service schools, and Joint Staff schools. Using a PROBIT regression technique, Dr. Bowman made the following findings: For SWOs completion of Joint Staff schools provided a significant increase in probability of promotion to O-5, while any form of JPME provided a significant increase probability of promotion to O-6. For NUCs completion of Service and Joint Staff schools provided a significant increase in probability of promotion to O-5, while no form of JPME provided a significant increase in probability of promotion to O-6. For Pilots, Service and Joint Staff school completion provided a significant increase in probability of promotion to O-5, while only foreign Service school completion provided a significant increase in probability of promotion to O-6. For the NFOs, Joint Staff school completion provided a significant increase in the

³⁴ Bowman, William R., *Career Progression of Line Officers and Graduate Education in the U.S. Navy, Department of Economics*, U.S. Naval Academy, Annapolis, MD, September 1996.

probability of promotion to O-5, while Service school completion provided a significant increase in the probability of promotion to O-6. These results provide some general insight into the positive effects of JPME across URL communities.

The preceding summary of JPME related studies has provided some insight into areas which already have been examined. The results of these studies may be useful in providing some additional insight into this analysis. The following chapter (Chapter III) extends the previous discussion of organizational culture by relating it within the context of the Navy. Additionally, the following chapter provides a summary of the Navy's interpretation and implementation of CJCS PME/JPME related policies.

III. THE SURFACE, SUBMARINE, AND AVIATION COMMUNITIES

A. INTRODUCTION

The previous chapter presented a discussion of Human Capital Theory, which provides the theoretical foundation for education and training. It then transferred that theory to the military context by showing some comparisons between various human capital investments in DON -- in this case JPME. The last chapter also provided a comparison/contrast between education and training, which led to a discussion the intended outcome of these investments -- organizational culture. Lastly it presented the CJCS Program of JPME which was decomposed into its various parts providing a basis for the model in this analysis. However, the previous chapter failed to address two questions. These are: (1) What is the organizational culture of the DON? and (1) How does JPME fit into the context of the DON concerning the URL Naval officer career? This chapter will address these questions.

B. OVERVIEW

To address these two questions in their entirety is well beyond the scope of this thesis. However, there have been a number of studies devoted to this particular topic. One study, in particular, provided an analysis of future career management systems for all military officers.³⁵ A second study conducted by the Bureau of Naval Personnel (PERS-2) entitled *Officer Corps Management in 2000 and Beyond*, conducted a bottom-up

³⁵ Thie, Harry, *Future Career Management Systems for U.S. Military Officers*, RAND (MR-470-OSD), Santa Monica, CA, 1994.

review of career management in the Navy officer corps.³⁶ The interim results of this study provide some insight into the URL Naval officer career for purposes of this analysis.

The BUPERS study had the effect of clarifying for every Naval officer community what are considered to be "must have" and "nice to have" assignments in a career.³⁷ By providing an overview of the competing constraints through the eyes of the PERS-2 study, this analysis is able to shed some light on the issue: How and why does the Navy determine which officers to select for JPME? To lay the groundwork for the remainder of the chapter, this analysis provides insight into the organizational culture of the Navy.

C. NAVY ORGANIZATIONAL CULTURE

All military services have well established cultures, which serve to others as their individual identities. Of all the services, however, some say the Navy has garnered a reputation as the "independent service." The essence of this belief is found this quote:

The Navy sees itself mainly as an heir to a glorious tradition dating back to the British navy...If tradition is the altar at which the Navy worships, then one of the icons on that altar is the concept of independent command at sea, which is to be sought and honored by every true Naval officer...Equipped with its own land and air force, the Navy jealously guards its independence and is happiest left alone.³⁸

³⁶ Bureau of Naval Personnel (PERS-2), Surface Warfare Officer Career Progression Briefing, August 14, 1996.

³⁷ Philpott, Tom, *The Navy's Pressure Cooker*, U.S. Naval Institute Proceedings, GPO, Washington, DC, May, 1996.

³⁸ Builder, Carl H., *The Masks of War, American Military Styles in Strategy and Analysis, A RAND Corporation Research Study*, Johns Hopkins University Press, Baltimore, MD, 1989.

Whether the Navy is truly deserving of this reputation is not necessarily the concern here. What is of concern is how the Navy has managed to establish this reputation. Many point to the Navy's history of being vocal when it comes to the topic of service unification.³⁹ Maybe the Navy is the most vocal amongst all the services about the impact of GNA. However, the driving force behind this response may well lie deep below the surface of Navy -- down to the roots of service culture.

A previous section of this thesis provided some general insight into organizational culture. One point conveniently left out from that discussion is that organizational culture is not necessarily limited to the physical boundaries of the organization. Organizational culture extends well beyond the physical boundaries and can have an impact on those outside the organization as well. In effect, organizational culture influences how outsiders view that organization as a whole. Thus, another liability of culture can result if outsiders see an organization in a different light from that which the organization generally perceives itself. The following quote, provides a summary of how one outsider views the DON organization.

All the services make intraservice distinctions among their people, particularly their officers, on the basis of their specialties or skills. They differ, however, in how these distinctions are made and used. Therefore, these distinctions are a useful cue to differences among the services on what they think is important and what they are about. The Navy is the most elaborate about its distinctions among, and the relative ranking of, its various components, branches, or activities. The implicit intraservice distinctions within the Navy provide an extensive, finely-structured,

³⁹ Builder, Carl H., *The Masks of War, American Military Styles in Strategy and Analysis, A RAND Corporation Research Study*, Johns Hopkins University Press, Baltimore, MD, 1989.

hierarchical pecking order from top to bottom...At the pinnacle of this structure is the warfare officer. The warriors are most evident among the younger members of the institution; and they generally leave it to the institutional fathers to look to the institution's future while they hone their warrior skills for today...It is apparent from this hierarchy that the distinctions are made on the basis of what the Navy calls "platforms" the machines in which the men serve, and their basing. These distinctions usually divide careers at their beginning; the blending (if any) usually comes at the O-6 level; in between, few cross over from one career (platform) path to another. The Navy supports the notion that every (unrestricted) line officer is a potential candidate for the Navy's top job, the Chief of Naval Operations (CNO). Therefore, the hierarchy in career specializations can be associated with the experience relevant to the management of the total Navy. Consequently, there are factions in the Navy too isolated from the mainstream of operations (such as the SSNs) who will never have the chance to become CNO. (Builder, 1989)

Is the Navy deserving of this type of broad generalization? The fact remains, however, that this is how one outsider views the DON organization. This illustration serves as one example of how organizational culture can actually become a liability. It's obvious that (Builder, 1989) doesn't see the Navy the way the Navy sees itself.

The Navy considers itself to be different from the other services. Different in that the Navy is called upon to perform its strategic mission on a daily basis. Whereas, the other services do not operate in this same manner. They are referred to by some with the term "garrison services." That is, they wait in garrison for the call to respond, while the Navy maintains constant vigil operating on the front line. This is why, the proverbial brass ring in any URL Naval officer's career is command of a warfighting unit -- "command at sea." However, one advantage of command at sea is that it also brings with it the ability to operate over the horizon with little intervention -- under the context of doctrine this is referred to as operating under commander's intent.

Just mention the word "joint" and the hairs on the neck of every command aspiring Naval officer begin to raise, because to a real Naval officer "joint" means loss of independence. In essence, loss of command. Therefore, a joint assignment for a real Naval officer is something to be avoided like the plague. This attitude is evident in a recent tongue-in-cheek article published in Proceedings. Evident is the disdain for "joint" an attitude which this author refers to as the "Da Rita Syndrome."⁴⁰

With the "Da Rita Syndrome" fully ingrained in their minds every true Naval officer approaches his/her career in the building-block manner. Each operational assignment builds on the previous one. Every assignments should contribute directly to professional development of the warfighting skills. In fact, some shore duty assignments don't even count. Is there no time built into a career for anything else? But what about the all important human capital investments of JPME and GRADE ED? Do these take a back seat to URL community assignments? Is this the Navy overemphasis of the warrior that (Builder, 1989) tries to warn everyone about.

Builder can't be that far off base, because others have recently come to the same conclusion. In fact, the Navy's supposed over-emphasis on the "warrior" concept was recently blamed for leading the organization into a period of suboptimal performance. One author in particular characterizes the Navy "warrior" as having gone too far in this regard. In his recent book, Gregory Vistica,⁴¹ noted author suggests some Navy

⁴⁰ Da Rita, Lawrence, LCDR, USNR, *I Went Joint (But I Didn't Inhale)*, U.S. Naval Institute Proceedings, July 1993.

⁴¹ Gregory L. Vistica, *Fall From Glory*, Simon/Schuster, New York, NY, 1995.

"warriors" were allowed to go too far, resulting in the Tailhook scandal. While other warriors tried to cover it up. Supporting or refuting Mr. Vistica's comments is well beyond the scope of this analysis. However, this author thought it is necessary to make mention to provide some food for thought. With that in mind, this analysis sets a course toward providing additional insight into the URL Naval officer career paths -- the same officers that (Builder, 1989 and Vistica, 1996) affectionately refer to as "warriors."

D. URL OFFICER CAREER PATHS

Copies of the Surface Warfare (SWO), Nuclear (NUC) and Aviation (Pilot and NFO) Officer career paths are provided in Appendices B,⁴² C,⁴³ and D.⁴⁴ These matrices of assignments provide structure to a URL officer's career. Although, there are a multitude of assignment combinations URL officers might successfully follow during the course of a career, these career paths provide an suitable framework from which to manage their careers.

The introduction to this chapter mentioned the PERS-2 career management study was successful in focusing on these career paths and determining "must have" and "nice to have" assignments throughout a career. The following list summarizes those "must have" assignments (Kusumoto, 1997, Struble, 1997, Ryan, 1997, Phillipot 1996):

⁴² CDR Kusumoto, USN, Surface Warfare Officer Community Manager, (BUPERS-211W), Washington, DC, January 1997.

⁴³ CDR Struble, USN, Nuclear Officer Community Manager, (BUPERS-211N), Washington, DC, January 1997.

⁴⁴ CAPT Ryan, USN, Naval Aviation Officer Community Manager, (BUPERS-211V), Washington, DC, January 1997.

1. Division Officer Tour
2. Postgraduate Education
3. Department Head Tour
4. Executive Officer (XO) Tour⁴⁵
5. Commanding Officer (CO) Tour
6. Joint / Professional Military Education
7. Joint Duty Assignment
8. Major Command Tour
9. Washington, DC Tour
10. Operational / Headquarters Staff Tour

On the other hand, the following list summarizes those "nice to have" assignments within a URL career (Kusimoto, 1997, Struble, 1997, Ryan, 1997, Phillpot 1996):

1. Shore tour as a Junior Officer
2. Subspecialty utilization tour
3. More than one Washington Headquarters or Joint Tour
4. Longer Captain and Flag Careers

Completing all the assignments contained on this list of "must haves" proves to be somewhat of a daunting challenge, especially for the average officer. Any one of these "must have" assignments takes substantial time to complete. However, the training and

⁴⁵ Separate XO and CO assignments are applicable only to SWOs and NUCs. For the aviation community (Pilot and NFO) XO and CO tours are completed sequentially. Therefore, screening for both XO and CO in aviation is completed at the same time.

education provided during these "must have" tours is necessary for the professional development of an officer. Any one of the "must have" assignments left out at a critical point in a career could potentially stifle future chances of promotion. Add to these constraints additional ones imposed by GNA making some of these assignments mandatory for promotion to G/FO, and managing the careers of those top officers often referred to as a "fast-trackers" proves to be difficult.

There are costs and benefits an officer must weigh when considering every assignment. GRAD ED, JPME, and JDA have often been referred to as time away from community-specific URL training considered essential for promotion. For this very reason, there may be somewhat of a tendency to shy away from these assignments. For some officers, this is an effective and efficient means of career management.

The previous chapter summarized a number of studies, showing the important contributions these investments can make if managed properly throughout a career. This point brings to the forefront the question: How are human capital investments in URL Naval officer careers managed in the Navy? In particular: How are officers selected for the investment of JPME? The following section provides a summary of Navy policies concerning the current JPME screening, selection and assignment processes.

E. NAVY APPROACH TO JPME

1. JPME Policy Sources and Objectives

To manage the careers of URL Naval officers, the Navy has labored to establish a number of policies concerning various types of assignments. The Navy considers JPME to be a significant human capital investment in the career of a URL officer.

Consequently, specific policies have been developed to address the topic of selection and assignment. The Navy's current selection and assignment processes for JPME are derived from a number of different sources, which include the following documents:

1. Naval Officer Professional Development Study (DON, 1974)
2. Technical Competence / Education of the Officer Corps Study.⁴⁶
3. Advanced Education for the Officer Corps Study.⁴⁷
4. Chief of Naval Operations Service College Education Policy⁴⁸
5. Naval Officer's Career Planning Guidebook (1990 Edition)⁴⁹
6. Service School Selection Procedures.⁵⁰
7. Service College Administrative Screening Procedures⁵¹
8. Navy Federal Executive Fellowship Program Procedures.⁵²

⁴⁶ Reference to this study is made in the following memorandum: Chief of Naval Operations, Memorandum for the Chief of Naval Personnel, Technical Competence / Education of the "Future" Officer Corps, Washington, DC, May 15, 1996.

⁴⁷ Bureau of Naval Personnel (PERS 2), Memorandum, *Advanced Education for the Officer Corps*, Washington, DC, April, 3 1996.

⁴⁸ Chief of Naval Operations, *Service College Education Policy*, GPO, Washington, DC, May 19, 1989.

⁴⁹ Department of Navy, *The Naval Officer's Career Planning Guidebook*, NAVPERS 15605, GPO, Washington, DC, 1990.

⁵⁰ Department of Navy, *Service School Selection and Assignment Procedures*, OPNAVINST 1301.8, GPO, Washington, DC, 1984.

⁵¹ Bureau of Naval Personnel, PERS-440C, *Service College Administrative Screening Procedures*, GPO, Washington, DC, April 12, 1993.

⁵² Chief of Naval Operations, *Navy Federal Executive Fellowship Program*, OPNAVINST 1500.72B, GPO, Washington, DC, January 23, 1996.

9. Naval Military Personnel Manual Section 6620130.⁵³

10. Naval Postgraduate School Catalog⁵⁴

11. United States Naval War College Catalog⁵⁵

These formal Navy documents all cover various aspects of JPME, ranging from analyses to selection and assignment procedures. Upon careful examination of these documents, one finds the Navy's formal interpretation of the goal of JPME to be:

The goal of (J)PME is to enhance an officer's capacity to discharge responsibilities associated with high level command and staff positions within the armed forces. Attendance is considered a significant milestone in the professional development of a Naval officer. (DON, 1990)

This interpretation predates recent changes in CJCS JPME policy found in the 1996 OPMEP (CJCS, 1996). Even though, one may think it wrong to judge the Navy's policies based on past documents, they may serve to explain the Navy's current approach to JPME in a URL career. In fact, since the primary Navy instructions on Service school selection and CNO's policy on JPME have not been updated since 1984 and 1989, respectively, some might be inclined to conclude there has not been a significant shift in Navy philosophy toward JPME, in spite of what the OPMEP might otherwise say.

⁵³ Department of the Navy, *Naval Military Personnel Manual*, NAVPERS 15560C, GPO, Washington, DC, October 1991.

⁵⁴ Naval Postgraduate School, *Student Course Catalogue*, Monterey, CA, 1996.

⁵⁵ Department of Navy, *United States Naval War College Catalog*, GPO, Newport, RI, 1995.

2. JPME Structure

Figure 5 is intended as an aid to the following discussion on JPME policy formulation and implementation. Figure 5 shows JPME policy starts at the very top of the organization with execution of the CNO's Policy statement, establishing the Navy's overall objectives for JPME. Next, the Chief of Naval Education and Training (OPNAV N-7) is responsible for overall coordination of education policy, including JPME. The responsibility for implementing JPME policy concerning personnel matters rests squarely between two divisions in the Bureau of Naval Personnel. These divisions include the Assistant Chief of Naval Personnel for Military Personnel Policy and Career Progression (PERS 2) and the Assistant Chief of Naval Personnel for Distribution (PERS 4).

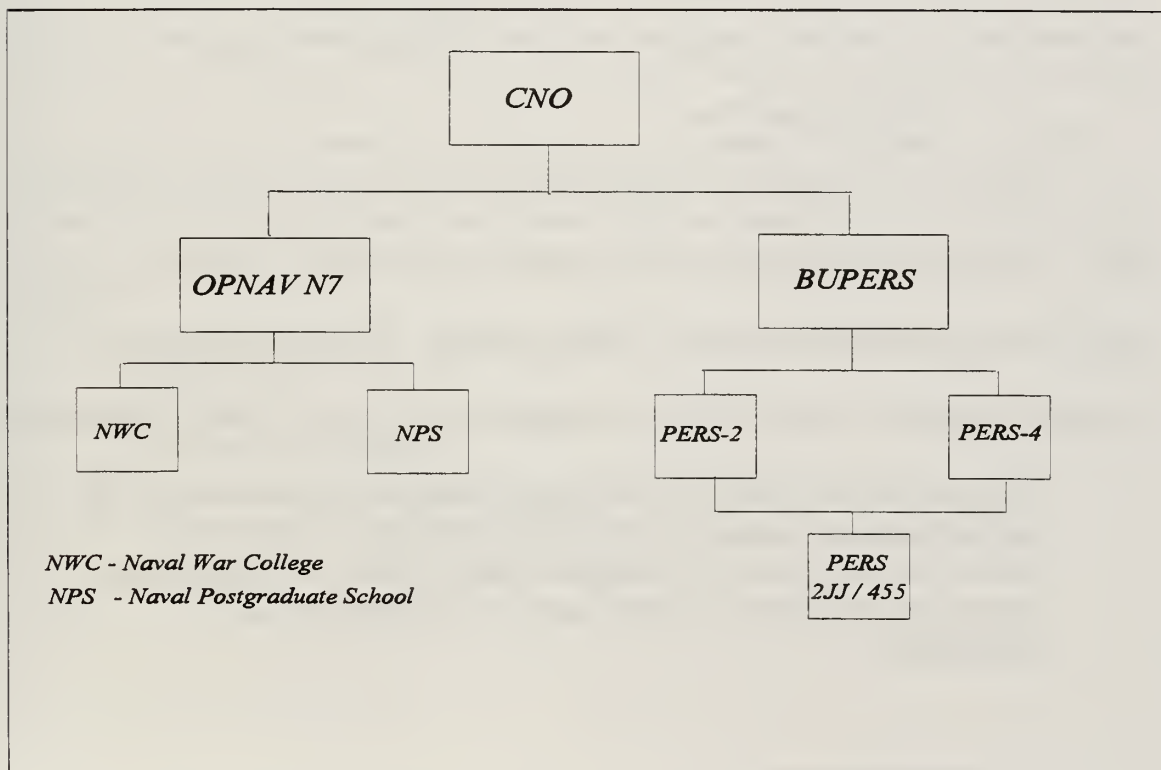


Figure 5. Organization of Navy JPME Policy Formulation and Implementation.

Turning first to a discussion of their responsibilities, one can see that PERS-2 is responsible for developing and issuing military personnel plans and policies, and monitoring adherence to ensure attainment of fiscal and end strength objectives. PERS-4 is responsible for implementing policies pertaining to officer and enlisted assignments, placement, retention, career enhancement and motivation, and career progression. Providing a link between PERS-2 and PERS-4 on JPME is the Special Assistant for Joint Matters (PERS-2JJ/455). PERS-2JJ/455 is responsible for coordinating, developing and implementing personnel policies pertaining to joint matters. These responsibilities include: developing the annual JPME Quota Plan (Service School and Joint Service School), in addition to monitoring and reviewing officers assigned to JPME and JDAs in an overall effort to maintain compliance with the Title X personnel requirements of GNA.

3. JPME Quota Plan

PERS-455 is specifically charged with producing the annual Navy JPME Quota Plan. This process includes determining quotas for Service Schools (JPME I), Joint Service Schools (JPME II) and some JPME equivalents. The following comments highlight a number of issues PERS-455 considers when crafting the JPME Quota Plan.⁵⁶

The level and distribution of JPME quotas cannot be justified solely on the basis of graduates required to fill specific joint billets. If JPME were viewed only as a "joint duty assignment training track" the requirement for JPME would be about 213 officers per year. Such an approach is unreasonable.

⁵⁶ Faber, Jerry, CDR, PERS-2JJ, *Point Paper on War College Student Quota/Funding Mismatch*, Washington, DC, May 30, 1995.

Lower quotas would require all officers who attend JPME to be locked into a follow-on tour, which would, when combined with the JPME, take them away from Navy assignments for up to four years -- the precise time in their career when they should be in Navy command assignments.

Additionally, there is a benefit in sending some additional officers to JPME even though their communities are exempt from legal requirements in GNA for JPME.

The law (GNA) requires a minimum ratio of students from all services in each of the Service schools. Those quotas are currently at the minimum level necessary to allow the service schools to meet the student service mix required by law. The "required" level of quotas to support non-Navy schools is currently about 190/yr.

The previous comments highlight the fact that if it weren't for JPME requirements mandated by GNA, there might be a lot less Naval Officers assigned to complete JPME.

Therefore, it is plain to see the requirements of GNA actually drive the Quota Plan. To effectively manage quotas, PERS-455 has developed the following Quota Model as a tool to determine the annual number of billets required to maintain compliance with GNA.

Figure 6 shows the three primary factors taken into consideration by the PERS-455 Quota Model are:

1. JDAL Size;
2. Critical JDAL Billets;
3. Percent detailed to Phase II JPME and JDA.

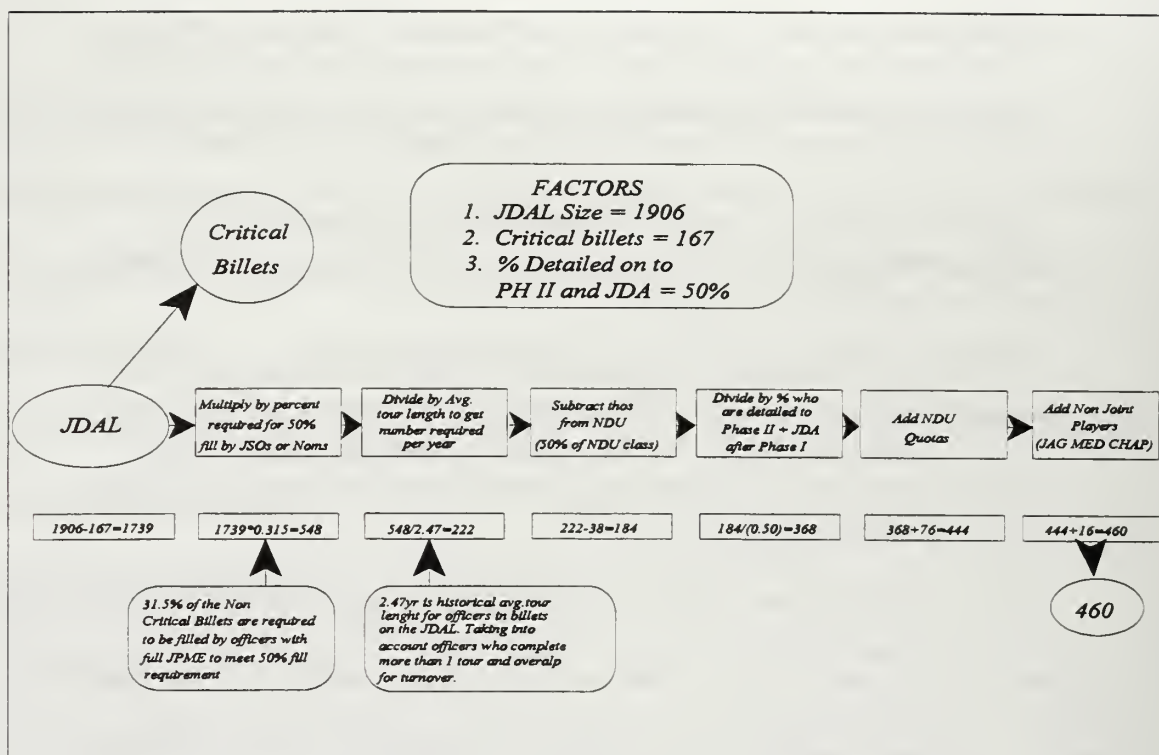


Figure 6. JPME Quota Plan Model. From (PERS-455, 1997).

Figure 6 shows a total of 460 JPME quotas were required to meet the 1995 JDAL requirements -- 40 extra were quotas thrown in to provide an added measure of comfort. This illustrates why the quota plan remains consistently at a level of 500 JPME quotas. In effect, the plan provides quotas for all Service Schools (Phase I), Joint Schools (Phase II and Phase I / II) and Foreign Service Colleges (Phase I). However, it does not provide quotas for the Navy Federal Executive Fellowship Program. This program is handled by OPNAV N3/N5, and will be addressed in a separate section.

Figure 7 is a depiction of the increase in number of Service School quotas and fills during the period of 1986 to 1996.⁵⁷ One important point to note from this figure is

⁵⁷ LT Jamie Counter, *Service College Attendance*, Washington, DC, January 1997.

the marked increase in Service School quotas starting in 1988, followed by a leveling off at 500 in 1993.

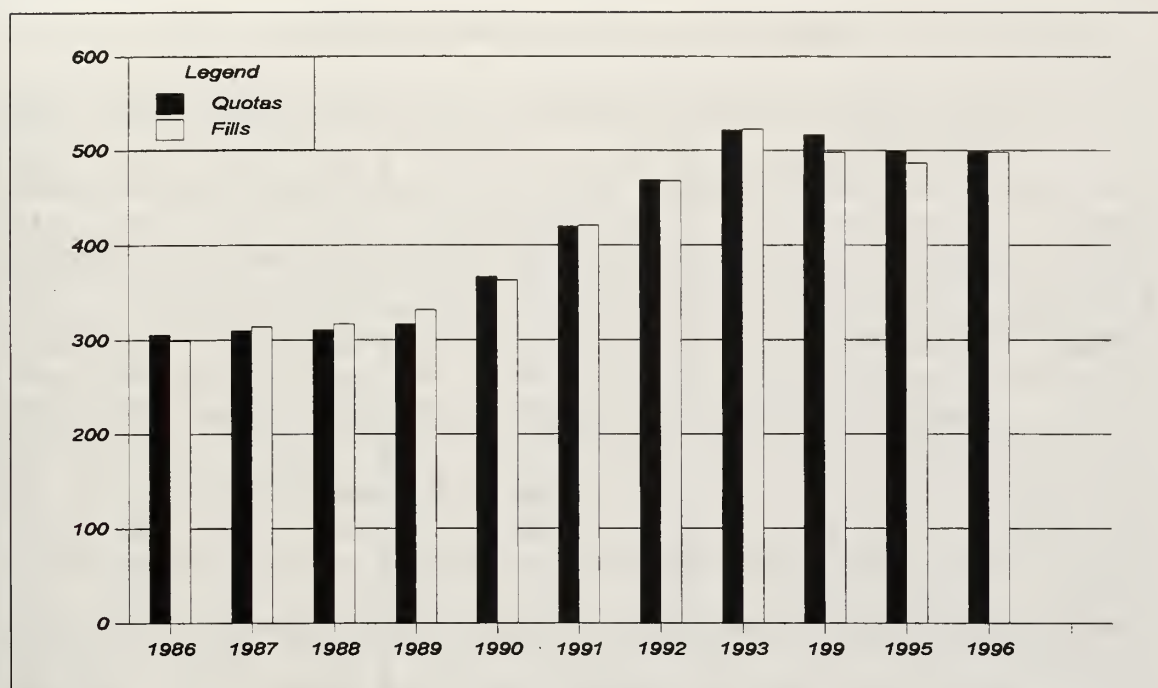


Figure 7. Service College Attendance. From (PERS-440C, 1997).

Once PERS-455 has established the quota plan, the quotas are divided amongst the various communities based on predetermined ratios. For FY96, the distribution of Service school quotas between URL and restricted line/staff corps (RL/Staff) communities remained constant from previous levels set at 75% URL and 25% RL/STAFF for senior level courses and 71% URL and 29% RL/Staff for Intermediate level courses. For the Joint Service Schools each community is provided its fair share of quotas based on its percentage of billet requirements of the JDAL.⁵⁸ Table 3.1 depicts the actual enrollment in the Service and Joint schools for the ten year between FY87 and

⁵⁸ Email from LCDR Alan Grace, PERS-455B/2JJ, February 5, 1997.

FY96.⁵⁹ This figure shows the minimum levels required by law to maintain the student service mix within the other service schools.

Table 3.1. Navy JPME Enrollment FY87-96.

	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96*
NWC	95	99	98	101	100	111	125	105	102	114
NCSC	97	83	84	106	110	142	165	163	162	168
ICAF	40	40	39	39	40	40	40	43	43	43
NATL	28	28	28	27	28	28	28	30	29	29
USAWC	8	8	8	8	8	8	8	9	7	10
USAGCS	3	8	8	10	39	49	60	60	45	45
AWC	10	10	9	11	15	16	15	15	14	15
ACSC	4	11	11	25	35	34	35	35	35	35
MCWAR	-	-	-	-	1	1	1	1	2	2
USMCSC	9	12	12	23	24	24	24	25	25	25
FOR	20	17	17	15	19	17	20	15	20	14
SIWS	-	-	-	-	-	-	-	3	3	-
TOTAL	314	316	314	365	419	470	521	504	487	500

* FY95 BASED ON QUOTA PLAN

SOURCE: Joint Officer Management Brief, PERS-455, January 1997.

It was mentioned earlier, one form of JPME not accounted for by the PERS-455 JPME Quota Plan is the Navy Federal Executive Fellowship (FEF) Program. Therefore, this program is omitted from the summary in Table 3.1. The reason for this omission?

⁵⁹ PERS-455, *Navy Joint Officer Management Briefing*, Washington, DC, January, 1997.

Quota management for this program is handled by OPNAV N3/N5, and selection is by Administrative Board requiring a separate application process. The officers graduating from this program throughout its history have been few in number. However, these officers have been granted Phase I (intermediate or senior level) credit. As of 1997, Phase I credit will no longer be awarded for completion of the FEF intermediate programs. In addition, as of 1999, Phase I credit will no longer be awarded for completion of the FEF senior programs. In light of this development, the FEF Program will not be covered in the following section concerning selection processes.

4. JPME Selection Processes

Selection for Service and Joint Service schools consists of two distinct and separate processes. Service school selection is conducted by Administrative Board procedures. Joint Service School selection is conducted in a totally different fashion -- the driving force behind Joint Service School selection, particularly for AFSC, is assignment to a JDA. The following section highlights the differences between these unique approaches to selection.

a. Service School (Phase I) Selection

There are two types of boards held within BUPERS. These boards include: Administrative and Statutory. Administrative Boards make selections once made by committees or by detailer action not otherwise governed by law, whereas, Statutory Boards are selection processes specifically governed by law. A Promotion Board is one example of Statutory Board. The following paragraphs taken from

Perspective Magazine include a detailed description of each of these type of boards. This description is intended to show the applicability of Boards to the JPME selection process.⁶⁰

Statutory promotion boards are comprised of several steps. One of the final steps is the selection phase. During the selection phase, all officer records are briefed to board members in a room called the "Tank" (a private, theater-like room). Candidates for promotion can be from any one of three categories, including: above-zone (late), in-zone (on time), and below-zone (early). In the tank all members discuss and vote on candidates. During the voting process, each board member uses a "secret ballot" computer keypad located on the arm of their seats to vote a confidence level for the selection of the candidate. Each member can vote either 100% (the member is 100 percent sure the candidate should be selected), 75%, 50%, 25%, or 0% (the candidate should NOT be selected). After all the votes are cast, a computer in the tank combines them into a overall *confidence rating*, which is then displayed as a percentage on a monitor for all members to see.

The *confidence rating* of each candidate is recorded and then all candidates are ranked according to their assigned rating after all the records have been reviewed. The board president then selects a number of the records from the top scorers to be "tentatively selected." The president will propose this selection as a motion to the entire board. The board either votes on the motion or members offer counter proposals. Whichever proposal is accepted, it is accepted by a majority vote of all the members. This same scenario is repeated when the board attempts to determine which number of the bottom scoring candidates should be "dropped from further contention."

All the candidates between the "selected" and "dropped" scores are re-reviewed in the tank. These candidates receive another *confidence rating* and the process starts over again. Several tank sessions are usually required before the board comes up with the number of candidates who are best qualified for promotion.

⁶⁰ Department of Navy, *Perspective Magazine*, GPO, Washington, DC, January - February 1997.

Unlike the promotion process, the Service college screening process is completed by administrative board action following completion of the annual statutory O-4, O-5, and O-6 promotion boards. The following board procedures were described to this author concerning the JPME Administrative Selection Board (Counter, 1997):

The *final confidence levels* assigned to officers during the O-4 and O-5 statutory promotion boards are used to provide an overall ranking of candidates for the JPME Administrative Selection Board. At the O-4 and O-5 levels, those officers selected for JPME consist of the top 50% of the in-zone promotees and 100% of the below-zone promotees using those *confidence ratings* from the Statutory Board. At the O-6 level, all officers selected for promotion are selected for JPME.

Since the service college administrative board essentially piggy-backs the Statutory Promotion Board, in reality, the Navy doesn't necessarily conduct a separate board to select its officers for JPME. However, all the other services actually go to great lengths to convene separate boards to determine which officers they select for JPME.⁶¹

b. Joint Service School (Phase II) Selection

Previous reference was made to the selection process for Joint Service schools being different than the selection process just described for Service Schools. The following direction was provided to PERS-455 by the PERS-4 Division Head concerning Joint Service School selection. It highlights the current process for selection to JPME II.

The focus on JPME Phase II has always been to send the "right" officers to AFSC to complete their joint education. The right officer is he/she who can benefit the most from receiving the training. Numerous Military

⁶¹ Koran, John G., *Manpower Management for Joint Specialty Officers: A Comparative Analysis*, Naval Postgraduate School Master's Thesis, Monterey, CA, December 1990.

Education Coordination Conference (MECC)⁶² working groups have convened over the past 4 months, chaired by JCS J1, with the expressed (sic) purpose of exploring joint training, doctrine and education. At each meeting, the point has been made the CINC's "are not happy with gapped billets related to officers receiving Phase II." To combat this problem, all services must "improve the service personnel assignment process and Phase II timing." The strict interpretation of this is to capture them enroute to the joint tour vice (sic) pulling them out TAD for 3 months.

Our placement process focuses on exactly this, send them enroute to their PCS orders to their first Joint tour. It's the right thing to do for two reasons, first we get our Navy officers fully funded joint education prior to walking in the door to work for the CINC, and second, it maximizes our opportunity to ensure compliance with Title 10 requirements to ensure a minimum of 37.5 % of the JDAL is filled by JSO's or JSO nominees with JPME. Based on these requirements, seating priority (for AFSC) follows:

- Pri 1 ⁶³ - PCS enroute to overseas Joint assignment
- Pri 2 - PCS enroute to CONUS Joint assignments
- Pri 3 - TAD and return from a Joint assignment (within first year)
- Pri 4 - TAD and return from a Joint assignment (second-third year)
- Pri 5 - PCS enroute non-joint assignments
- Pri 6 - TAD and return from non-joint assignments

These preceding comments reveal the Phase II selection process is primarily driven by three factors. These three factors include:

1. Future Promotability.
2. Previous completion of Phase I JPME.
3. Assignment to a JDA.

⁶² Guidance for the MECC working group is provided by CJCS in the OPMEP. The OPMEP states "The MECC addresses key educational issues, coordinates the overall joint educational effort and examines and evaluates the Program for Joint Education (PJE) objectives.

⁶³ The term Pri cannot be found in any JCS document. It is another way of saying Priority levels, which is a BUPERS method of setting precedence levels for billet assignments. In this case, AFSC JPME II, receives different placement priority levels.

The JPME selection process is not necessarily considered complete at the end of the administrative screening process. The previous section intimated there is a continued concern about future promotability even after an officer has been assigned to JPME. The following section details the procedures put in place to monitor for future promotability of officers prior to and during attendance of JPME.

5. JPME Placement Processes

Although, the Administrative Screening Board provides data on those officers eligible for JPME an additional screening mechanism is necessary. To monitor for future promotability, in 1993 PERS-4, directed the addition of Service College Administrative Screening Procedures. The Service College Administrative Screening Procedure "serves as a complement to the service college pre-screening selection board process...and...is required for all Senior course nominees, and those Junior course nominees up for promotion while attending service college."⁶⁴ Inputs to the Administrative screening process come directly from the individual officer as well as the officer's warfare community. In effect, this administrative procedure provides an additional screening mechanism to constantly monitor officer personal preferences, promotion potential, as well as warfare community desirability. These redundant administrative procedures have apparently been put in place, because JPME is an significant investment in a career. As with most investments there is some kind of payback, which is seen in the next section.

⁶⁴ Natter, R.J., RADM, USN, ACNP for Distribution, Distribution Guidance Memorandum # 04-93, *Service College Administrative Screening Procedures*, Washington, DC, April 12, 1993.

6. JPME Payback Tour Requirements

The overall time required to complete most Service schools is approximately ten months. One exception includes some Foreign Service Schools which require an additional language school enroute to attendance. As part of the process CJCS reviews and promulgates an approved list of the Phase I Service Schools and their equivalents.⁶⁵ An officer who completes any one of the Service schools or their equivalents incurs a one year service payback requirement upon completion of the school (i.e., a 1:1 payback ratio). Again, some Foreign Service Schools serve as an exception to this rule, requiring upwards of a three year payback tour to be performed with the respective Foreign Service (e.g., Canada) upon completion of their service school.

Payback for Joint Service Schools consists of, in most cases, a three year JDA assignment. In most cases, those officers attending the three month JPME Phase II course do so enroute to a three year JDA afterwards. However, in very rare instances officers are assigned to a JPME Phase II quota without assignment to a follow-on JDA. The only exception in this case occurs when an officer has completed a JDA and returns to complete JPME afterward enroute to full JSO designation. For an officer to complete JPME II without assignment to a follow-on JDA requires submission of a Service waiver containing *strong* justification for CJCS approval.

⁶⁵ Chairman, Joint Chiefs of Staff, *Program for Joint Education Phase Equivalent Credit, Memorandum*, Washington, DC, September 11, 1996.

F. JPME IN THE NAVY AS COMPARED TO OTHER SERVICES

The Navy has been suspect in its conviction toward JPME. One official to question the Navy's resolve in this regard is former Representative Ike Skelton. He did so publicly during a series of House Armed Services Committee Congressional Hearings held on PME.⁶⁶ Others have questioned the Navy's commitment to providing quality officers to JPME. RADM Stark, President of the Naval War College, provided a number of statements showing the apparent lack of quality of Naval officers sent to JPME. A 1996 memorandum from RADM Stark to the CNO stated, "While all of the students work hard, it has been clear for some time the average performance of the Navy officers here is significantly lower than that of the other service representatives." To illustrate this point, RADM Stark used the following slide during a recent briefing on PME.⁶⁷

⁶⁶ House of Representatives, Hearings on Professional Military Education, Committee on Armed Services, H.A.S.C. No. 100-125, GPO, Washington, DC, 1990.

⁶⁷ Naval War College, *Professional Military Education Briefing*, Newport, RI, 1996.

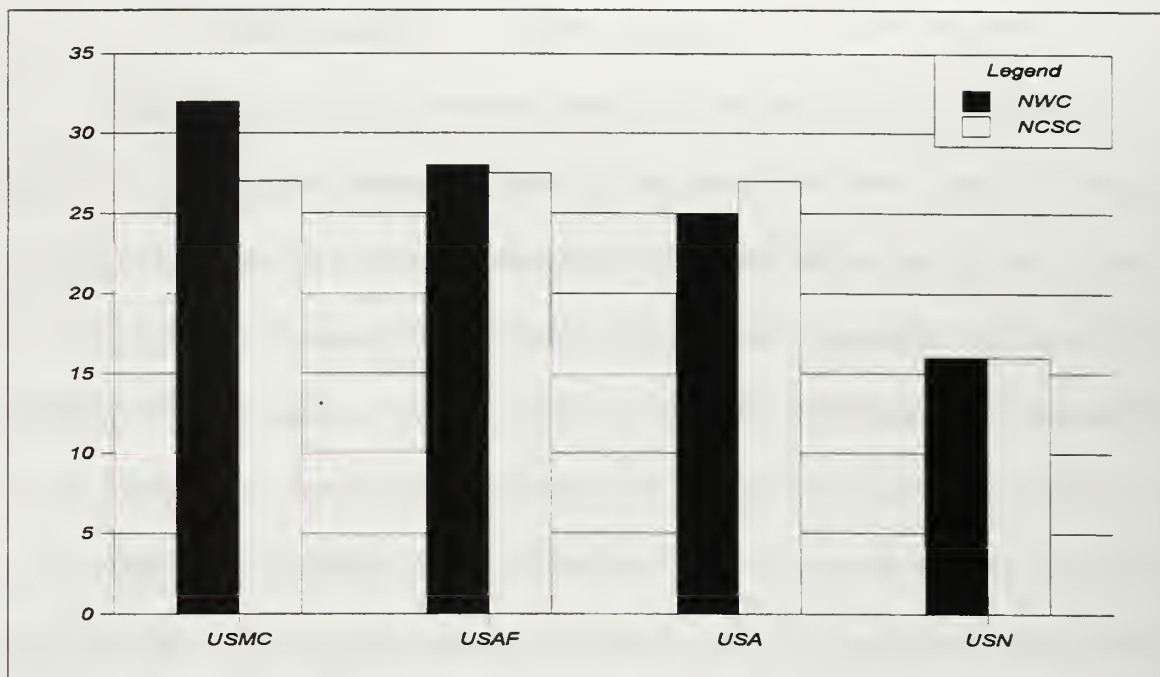


Figure 8. Naval War College Distinguished Graduates 1986 - 1995. From (NWC, 1996).

This slide shows the percentage of Distinguished Graduates amongst Naval Officers graduating from the Naval War College is significantly lower than that of the other services -- for both the intermediate and senior level courses. A previous section showed the other services actually convene separate administrative boards to determine which officers it sends to JPME. This formal selection process may have something to do with the "Distinguished Graduate" phenomenon RADM Stark describes. However, an alternative hypothesis might be that the added benefit of a graduate degree from attending the NWC makes that much more appealing to other Service members. This situation may cause other Service officers to compete for the NWC, resulting in higher quality officers.

A number of options have been provided as possible solutions to increasing the quality and number of Naval officers completing JPME. RADM Stark suggests, just like

the other services, making the completion of JPME a requirement for promotion. To effect this suggestion, RADM Stark has recommended the following changes to help increase JPME quality and completion within the Navy:⁶⁸

1. Increase attendance at the Service Colleges.
2. Restructure NWC Correspondence Course.
3. Restructure Nonresident Seminar Course.

On the surface these suggestions seem like plausible solutions, especially since the NWC Correspondence Course was recently shortened in length to two years.⁶⁹ In addition the NWC Nonresident Seminar Program has recently undergone revision.⁷⁰ However, there are several questions that still need answers: (1) How many Naval officers are completing other Service School nonresident courses, and why? (2) Now that a shortened version of the NWC Correspondence Course is being offered, how many more Naval officers will complete this version? Tables 3.2 and 3.3, show enrollment in the various Service school correspondence and nonresident seminar courses as of January 1997. These statistics were reported by individual Service school Continuing Education

⁶⁸ Stark, J. R., RADM, USN, *Memorandum for the Chief of Naval Operations Vice Chief of Naval Operations from President War College*, Newport, RI, October 11, 1995.

⁶⁹ U.S. Naval War College, *Nonresident Programs Information Guide*, Newport, RI, 1996.

⁷⁰ Phone conversation with Professor Timothy Jackson, Deputy Director, Continuing Education Department, Naval War College, Newport, RI, January 1997.

Department personnel to this author.⁷¹ They are intended to show the existing demand for all Service School JPME Correspondence Courses throughout the military officer corps. They are also intended to show the possible existence of competition between Service Schools in this area.

Table 3.2. Service School Correspondence Course Enrollment By Service

SERVICE	CGSC	NWC	ACSC	USMC	TOTAL
ARMY	3565	7	37	86	3695
NAVY	17	178	138	19	352
AIR FORCE	41	15	2386	33	2475
MARINE	6	37	10	1052	1105
COAST GUARD	0	6	44	2	52
RESERVE	3324	161	2009	867	6361
CIVILIAN	103	16	301	11	431
FOREIGN	2	36	0	0	38
TOTAL	7058	456	4925	2070	14509

SOURCE: U.S. Service Schools' Continuing Education Offices, January 1997

⁷¹ Source of Correspondence Course and Seminar Enrollment provided by:

(a) Phone conversation with Ms. Kathy Wagner, Chief of Student Correspondence Services, Army Command and General Staff College, Leavenworth, KS, January 1997.

(b) Phone conversation with Mr. Kevin Purvis, Education Advisor, Department of Continuing Education, Naval War College, Newport, RI, January, 1997.

(c) Phone conversation with Ms. Sheila Gordon, Distance Learning Department, Air Command and Staff College, Montgomery, Alabama, January, 1997.

(d) Phone conversation with LtCol Sean Connolly, USMC, Department of Continuing Education, Marine Corps Command and Staff College, Quantico, VA, January, 1997.

Note: USMC does not offer separate courses, so enrollment shown is identical.

Table 3.3. Service School Non-Resident Seminar Enrollment by Service.

SERVICE	CGSC	NWC	ACSC	MCCSC	TOTAL
ARMY	345	9	23	86	463
NAVY	11	277	66	19	373
AIR FORCE	3	11	1233	33	1280
MARINE	6	37	10	1052	1105
COAST GUARD	0	25	0	2	27
RESERVE	1349	213	321	867	2750
CIVILIAN	0	127	343	11	481
FOREIGN	0	3	0	0	3
TOTAL	1714	702	1996	2070	6482

SOURCE: U.S. Service Schools' Continuing Education Offices, January 1997

Tables 3.2 and 3.3 show a significant number of Army and Air Force officers completing nonresident JPME as compared to the other services. This figure includes correspondence and seminar. Indirectly, these figures show the emphasis these two services place on completing JPME. Another interesting statistic is the number of Naval officers completing the Air Force correspondence course. There are a total of 138 Naval Officers completing the ACSC Force course, which is almost as many as the 178 completing the NWC Course. The reason for this disparity could be twofold⁷²:

1. 18 month length of ACSC Correspondence Course
2. CD-ROM Format of ACSC Correspondence Course

⁷² Air Command and Staff College, *Distance Learning Programs Brochure*, Maxwell, AFB, AL, January, 1997.

One demonstration of the demand for JPME in the Naval officer corps was highlighted by a survey of Naval Postgraduate School (NPS) students conducted in December 1994. In this particular survey, the NPS students' primary professional development concern was JPME.⁷³ These facts indicate there is a demand for JPME amongst Naval officers. At this point in the analysis two additional questions bear mention: Is the competition for this demand being won by the Air Force and the Army? How best can the Navy better meet the demand for JPME? Although relevant, these questions are beyond the scope of this analysis, and are best left for a separate analysis.

One possible method to address the demand that RADM Stark recommends is by increasing attendance at the Service Schools. In response to RADM Stark's proposal, VADM Bowman, Chief of Naval Personnel, offered the following comments in a 1995 memorandum to VADM Tracey, Chief of Naval Education and Training (N-7). "Expanding the number of officers attending these courses beyond the levels currently supported will require a change in both our philosophy and our funding of (joint) professional military education. From student billets in an already under-funded individuals account to community-unique career path impact, our analysis of this issue will have to address the comprehensive approach to both (joint) professional military education and professional development education."⁷⁴

⁷³ Naval Postgraduate School, *Student Survey on JPME*, Monterey, CA, December, 1994.

⁷⁴ Bowman, F. L. VADM, USN, Chief of Naval Personnel), *Memorandum for the Director of Naval Training (N7)*, October 1995.

The Navy's philosophical approach to JPME in the broader context of personnel management is readily apparent in view of VADM Bowman comment -- with the consequences of this philosophy having a number of possible effects on the Navy officer corps. RADM Stark provided yet another slide during the same PME briefing to show the possible effects this philosophy has had on the Naval officer corps. Figure 9 is a copy of this slide.

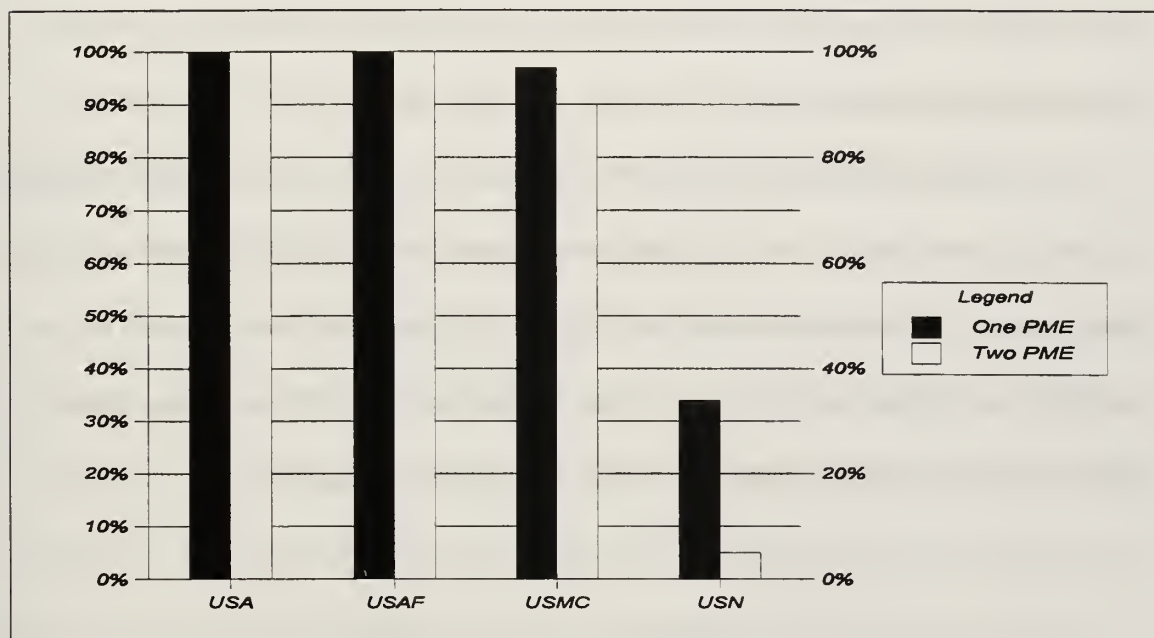


Figure 9. Current G/FO PME Completion. From (NWC, 1996).

Figure 9 shows the current PME completion percentages of all General / Flag Officers (G/FOs) from all four Services. The Navy is depicted with the lowest completion percentages of all the Services -- with only 33 percent of all current Navy G/FO's having completed one-step PME, and only 8 percent having completed two-step PME -- compared to the other services G/FOs showing almost 100 percent completion in both areas. In light of this last statistic, one might reasonably be justified in pointing to

the Navy's philosophical approach to JPME as one possible reason for its significant disparity in G/FOs with two-step PME.

At this point two related questions merit concern: Has the Navy's philosophical approach to JPME hampered the ability of the Navy officer to compete in the joint arena? If it has, then how might the Navy begin to alter its philosophical tendencies? The manner in which the Navy reacts to this challenge plays an important role in shaping the future, especially as it enters an era of increasing technological dependence -- an era which has been characterized a "Revolution in Military Affairs."⁷⁵

CJCS Joint Vision 2010⁷⁶ suggests one possible method for the Navy to maintain its competitive edge in the joint arena is through a continuum of JPME. The remainder of this study sets out to explore a small part of that continuum and the effect it has had on the URL Navy officer corps. As a means of determining this effect, the next chapter, Chapter IV, is devoted to a description of the data used in this analysis.

⁷⁵ Galdi, Theodor W., *Revolution in Military Affairs? Competing Concepts, Organizational Responses, Outstanding Issues*, Foreign Affairs and National Defense Division, Washington, DC, November 30, 1995.

⁷⁶ Chairman, Joint Chiefs of Staff, *Joint Vision 2010*, Washington, DC, June 1996.

IV. DATA AND METHODOLOGY

A. DATA

This study concerning the effects of JPME on the URL Naval officer career employs three different data files constructed by combining a number of Department of Navy administrative files. These three files contain data on all officers considered for promotion at the O-4, O-5 and O-6 Promotion Boards during Fiscal Years 1986 through 1994. Of primary interest to this study are the subset of Unrestricted Line (URL) officers bearing warfare designations in the surface (1110), submarine (1120), aviation (pilot (1310) and naval flight officer (1320)) communities.

The overall term for the type of file structure used in this study has been referred to in past studies as a "longitudinal-retrospective file."⁷⁷ This term implies two different connotations. First, it implies an approximation technique similar to that used in "cohort analysis."⁷⁸ This technique proves important when making comparisons of the effect of treatments after various periods of time. To be considered valid, the effects of any treatment should be compared between the same group of individuals receiving that original treatment. In the case of this analysis, comparing the effects of JPME (the

⁷⁷ Bowman, William, *Career Progression of Line Officers and Graduate Education in the U.S. Navy*, U.S. Naval Academy, Annapolis, MD, September, 1996.

⁷⁸ Cohort analysis is performed by using a longitudinal data set of a "cohort" of individuals beginning at a particular point in time -- a snapshot. Over time the same cohort is followed and different snapshots of outcomes taken for each individual. This technique allows the measurement of different effects across the cohort as a result of similar experiences over time.

treatment) should also be done for the same cohort of individuals at the same time.

Second, this term implies the ability to look backward over time. The ability to look back over time is important to this analysis, because it provides multiple opportunities to view different outcomes as a function of previous events. In the case of this analysis, it is important to determine whether different forms of human capital investments were undertaken, and at what times they were undertaken in a career. A "longitudinal-retrospective file" provides a suitable fit for this type of analysis.

The ability to access different data elements is also important to the effectiveness of this analysis. Therefore, three separate aggregated files were formed for officers at the O-4, O-5, and O-6 promotion boards by merging six different files. These files include:

1. Navy Officer Promotion History Files
2. Navy Officer Master File (OMF)
3. Navy Officer Data Card (ODC)
4. Navy Fitness Report (FITREP) Files⁷⁹
5. Navy Unit Identification Code (UIC) File
6. Joint Duty Assignment Management Information System (JDAMIS) File⁸⁰

Various data elements were taken from these five files, which provided the data for analysis in this Thesis. The Navy Officer Promotion History Files provides

⁷⁹ FITREP File provided by the Navy Personnel Research and Development (NPRDC) Command, San Diego, CA.

⁸⁰ JDAMIS File provided by Ms. Dawn de Iong, Defense Manpower Data Center (East), Arlington, VA.

information pertaining to promotion outcomes. The Navy Officer Master File (OMF) provides information pertaining to individual officer demographics, such as marital status and commissioning source and date. The Navy Officer Data Card (ODC) and Officer Master (OMF) Files both provide information pertaining to pre-commissioning and post-commissioning military education, training, experience and qualifications. The Navy Fitness Report (FITREP) File provides specific performance appraisal information of an officer by his/her reporting senior. The Navy Unit Identification Code (UIC) File provides valuable information pertaining to officer command assignment history not otherwise found in the OMF and ODC. Lastly, the Joint Duty Assignment Information (JDAMIS) File⁸¹ provides information pertaining to Joint Duty Assignment (JDA), Joint Professional Military Education (JPME) and Joint Qualification Data. This file supported similar existing information also found in the OMF.

The three data files were manipulated and analyzed using SAS⁸² Statistical Application Software on the IBM⁸³ mainframe computer at the Naval Postgraduate School. SAS proved particularly useful in this endeavor because of the large volume of data required to be manipulated when initially merging and sorting these six files. In addition, the use of SAS proved beneficial when manipulating data elements of the resulting O-4, O-5 and O-6 Promotion Board files, because it was necessary to combine a

⁸¹ Defense Manpower Data Center Profile, Defense Manpower Data Center, Seaside, CA, 1996.

⁸² SAS refers to Statistical Applications Software Institute, Inc., Cary, NC.

⁸³ IBM refers to International Business Machines Corporation, Armonk, NY.

number of existing variables. The techniques involved in combining variables relevant to this analysis are discussed in a latter section.

B. DATA AND THE CJCS JPME MODEL

The major relationships in the CJCS JPME Model consist of: level, phase and source. At this point it is important to relate these distinctions in a manner such that the data can support the analysis. The levels, phases and sources of the CJCS JPME framework depicted in Figure 4, is slightly complicated for this discussion, and, therefore, requires further simplification to support this analysis. Simplification is done by focusing on the sources of JPME. There were several commonalities that can be established between these sources. These include Resident for the Service Schools, Nonresident for the Correspondence and Seminar Courses, and Equivalents for the Federal Executive Fellowship Program and the Foreign War Colleges. For purposes of simplification, these distinctions will be used in this analysis. In so doing, it becomes necessary to further simplify the CJCS JPME Model, which is shown in Figure 10.

LEVEL		INTERMEDIATE	SENIOR
S O U R C E	PHASE I	RESIDENT	RESIDENT
		NONRESIDENT EQUIVALENT	
	PHASE II	AFSC > 90	
	PHASE I / II	AFSC < 90	NATL ICAF

Figure 10. Simplification of CJCS JPME Framework.

Like figure 4, figure 10 also shows two levels of JPME - intermediate and senior. However, the sources of have been further combined where the aforementioned commonalities occur. Separate distinctions for the intermediate and senior levels still exist for Resident Phase I JPME. However, Equivalent Phase I (Federal Executive Fellowship and Foreign Service Colleges), Nonresident Phase I and Phase II JPME have all been combined for these two levels. Like the Service college residents, Phase I / II sources remain separated for the intermediate and senior levels.

Previous studies have attempted to analyze the effects of JPME by using Joint AQDs to identify officers who have completed JPME (Kovach, 1996, Bowman, 1996). These AQDs include JS1, JS7, and JS8. A brief description of these AQDs is provided in Appendix E. For a more detailed description, this author refers the reader to (Perspective, January 1996) and (DON, 1992).

Reiterating a point made earlier, not all officers completing JPME are designated JSOs. Additionally, not all officers completing JPME obtain a Joint AQD. Furthermore, CJCS mandated removal of all JS7 AQDs from officers who completed JPME Phase I prior to 1989, but did not subsequently complete JPME Phase II prior to January 1, 1994 (CJCS, 1996). Although these same officers still maintained their JPME SSCs, the exact number of officers this policy change affected is not known.⁸⁴ Suffice it to say, some number of officers who have completed JPME are not accounted for by a Joint AQD in these data sets.

⁸⁴ Telephone conversation with LT Mike Velasquez, PERS-455C, January, 27 1997

At this point in the analysis, the question is: By not accounting for all officers completing JPME, did this significantly impact the results of previous analyses? (Kovach, 1996, Bowman, 1996) One cannot be certain it did not. Although, one thing is certain, an analysis of the effects of JPME on URL officers should include all URL officers who have completed JPME -- not just those identified with Joint AQDs. For this reason alone, this analysis does not rely solely on the Joint AQDs.

For purposes of this analysis, the different Service School Codes (SSC) assigned to an officer in accordance with (DON, 1992) provide the basis for determining JPME completion: level, phase and source. There are specific SSCs assigned that make distinctions for whether an officer completed Intermediate or Senior, resident or nonresident, Federal Executive Fellowship or Foreign Service College, Phase II or Phase I/II (combined) JPME. These distinctions are shown in Appendices F through M. For a more detailed description of these SSCs, this author refers the reader to (DON, 1992).

C. DATA FILES

The aggregated files for the O-4, O-5 and O-6 Promotion Board Files provide the basis for comparing effects of JPME across URL communities at different points in a career. Using the SSCs it was possible to determine the total number of officers completing JPME by any means from the three data sets. Results show a very small number of officers completing JPME prior to the O-4 Promotion Board. There were 65 officers in this category, which account for only 4 percent of all the officers completing JPME from the three data sets. Consequently, it wasn't necessary to construct a promotion model for this data set. Although, since some officers were able to complete

JPME this soon in their careers, it provided the additional opportunities to measure the effects of JPME on some officers.

The primary files used for this analysis consist of the O-5 and O-6 Promotion Board Files. The majority of the officers from these three data sets completing JPME did so prior to the O-5 Promotion Board. There were 911 officers in this category, which accounted for almost 56 percent of all the officers completing JPME. The second greatest percentage of officers from these three data sets completing JPME did so after the O-5 and before the O-6 Promotion Board. There were 655 officers in this category, which accounted for 40 percent of all officers completing JPME.

Table 4.1 shows the greatest proportion of officers completing JPME between all three data sets occurred between the O-4 and O-5 promotion board, the second greatest between the O-5 and O-6 boards, and the smallest prior to O-4. Additionally, this type of proportional relationship can be extended to show a cumulative relationship. Here, only four percent of all officers complete JPME prior to O-4, 60 percent prior to O-5, and 100 percent prior to O-6.

Table 4.1. Proportion of Officers Completing JPME as a Function of Completion Time

COMPLETED	TOTAL #	PERCENT	CUMULATIVE
<O-4	65	4%	4%
>O-4 <O-5	911	56%	60%
>O-5 <O-6	655	40%	100%
COMPLETED	1631	100%	--

The previous proportional relationships don't necessarily hold true for all JPME completion, because some officers don't complete it until after the O-6 and prior to the O-7 Promotion Boards. Unfortunately, that data set was not available for this analysis. Additionally, a proportional analysis of this nature doesn't take into account the relative decrease in number of officers between ranks of O-4, O-5 and O-6. None-the-less, it provides some basis for comparison. The next section focuses on each of the data sets.

D. DATA SETS

The O-4, O-5, and O-6 data sets are used to determine the effects of JPME on all URL officers throughout their careers. As mentioned earlier, to effectively compare the differences of JPME on URL officers, it is necessary to compare the same URL officers at the same time. The O-4, O-5 and O-6 Promotion Boards provide the most suitable points in time for measuring these effects. Since it is necessary to measure the effects of JPME on all officers at the respective promotion boards, this analysis is concerned only with those officers actually staying to those promotion boards. The following paragraphs provide some general statistics by URL community.

1. O-4 Promotion Board File

There were a total of 9686 URL officers in the O-4 Promotion Board File. Of these officers, 65 had completed JPME. Noteworthy, is all officers completing JPME prior to the O-4 Promotion Board stayed to this Board. This amounts to a 100 percent retention rate of all officers completing JPME prior to the O-4 Promotion Board.

Table 4.2 shows the number of URL officers completing JPME appearing before the FY86-95 O-4 Promotion Boards by designator and level, phase, and source of JPME.

Table 4.2. Number of Officers Completing JPME Appearing Before the FY86-95 Promotion Boards (O-4), By Designator and Level, Phase, and Source of JPME.

JPME		DESIGNATORS				
		1110	1120	1310	1320	TOTAL
LEVEL		INTERMEDIATE				
T Y P E	RESIDENT	0	0	0	0	0
	NONRESIDENT	22	9	10	22	63
	EQUIVALENT	0	0	0	1	1
	PHASE II	0	0	0	0	0
	PHASE I/II	0	0	0	1	1
	NO JPME	3105	1480	2866	2170	9621
TOTAL		3127	1489	2876	2194	9686
% WITH JPME		0.7%	0.6%	0.3%	1.1%	0.7%

Of course, not all 65 officers with JPME who stayed to the O-4 Promotion Board were successful in promoting. Of those 65 officers, only 44 successfully promoted, which amounts to a 68 percent promotion rate. The promotion rates for the individual types, sources and levels of JPME include: nonresident JPME 67 percent, equivalent and Phase I/II 100 percent. Table 4.3 shows the number of URL officers completing JPME promoting during FY86-95 O-4 Promotion Boards by designator and level, phase, and source of JPME.

Table 4.3. Number of URL Officers Completing JPME Promoting During the FY86-95 Promotion Boards (O-4), By Designator and Level, Phase, and Source of JPME.

JPME		DESIGNATORS				
		1110	1120	1310	1320	TOTAL
LEVEL		INTERMEDIATE				
T Y P E	RESIDENT	0	0	0	0	0
	NONRESIDENT	14	9	6	13	42
	EQUIVALENT	0	0	0	1	1
	PHASE II	0	0	0	0	0
	PHASE I/II	0	0	0	1	1
	NO JPME	2287	1196	2163	1543	7189
TOTAL		2301	1205	2169	1558	7233
% WITH JPME		0.6%	0.7%	0.3%	1.0%	0.6%

2. O-5 Promotion Board File

There were a total of 6529 URL officers in the O-5 Promotion Board File. Of these officers, 955 had previously completed JPME. This figure includes the same 44 officers from above. Noteworthy, is all officers completing JPME prior to the O-5 Promotion Board stayed to this Board as well. This amounts to a 100 percent retention rate of all officers completing JPME prior to the O-5 Promotion Board. Table 4.4 shows the number of URL officers completing JPME appearing before the FY86-95 O-5 Promotion Boards by designator and level, phase, and source of JPME.

Table 4.4. Number of URL Officers Completing JPME Appearing Before the FY86-95 Promotion Boards (O-5), By Designator and Level, Phase, and Source of JPME.

JPME		DESIGNATORS				TOTAL
		1110	1120	1310	1320	
LEVEL		INTERMEDIATE				
T Y P E	RESIDENT	167	12	189	174	542
	PHASE I/II	90	14	77	72	253
LEVEL		SENIOR				
T Y P E	RESIDENT	0	0	2	1	3
	PHASE I / II	0	0	0	0	0
LEVEL		INTERMEDIATE AND SENIOR				
T Y P E	NONRESIDENT	13	7	14	22	56
	EQUIVALENT	11	0	2	11	24
	PHASE II	35	4	16	22	77
	NO JPME	1753	837	1715	1269	5574
TOTAL		2069	874	2015	1571	6529
% WITH JPME		15%	4%	15%	19%	15%

Of course, not all 955 officers with JPME who stayed to the O-5 Promotion Board were successful in promoting. Of those 955, only 663 successfully promoted, which amounts to a 69 percent promotion rate. The promotion rates for the individual types, sources, and levels of JPME included: intermediate Phase I resident 72 percent, senior Phase I resident 67 percent, intermediate Phase I/II 60 percent, nonresident Phase I 61 percent, equivalent 71 percent, and Phase II 69 percent. Table 4.5 shows the number of

URL officers completing JPME promoting during the FY86-95 O-5 Promotion Boards by designator and level, phase, and source of JPME.

Table 4.5. Number of Officers Completing JPME Promoting During the FY86-95 Promotion Boards (O-5), By Designator and Level, Phase, and Source of JPME.

JPME		DESIGNATORS				TOTAL
		1110	1120	1310	1320	
LEVEL		INTERMEDIATE				
T Y P E	RESIDENT	118	7	149	114	388
	PHASE I/II	71	11	53	34	169
LEVEL		SENIOR				
T Y P E	RESIDENT	0	0	1	1	2
	PHASE I / II	0	0	0	0	0
LEVEL		INTERMEDIATE AND SENIOR				
T Y P E	NONRESIDENT	11	6	9	8	34
	EQUIVALENT	8	0	2	7	17
	PHASE II	26	3	12	12	53
	NO JPME	1121	638	1207	720	3686
TOTAL		1355	665	1433	896	4349
% WITH JPME		17%	4%	16%	20%	15%

3. O-6 Promotion Board File

There were a total of 3950 URL officers in the O-6 Promotion Board File. Of these officers, 1318 had previously completed JPME. This figure includes the same officers from above. A total of 33 officers did not stay to the Promotion Board leaving

only 1285 officers with JPME. This accounts for 97 percent retention rate of all officers completing JPME prior to the O-5 Promotion Board. Table 4.6 shows the number of URL officers completing JPME appearing before the FY86-95 O-6 Promotion Boards by designator and level, phase, and source of JPME.

Table 4.6. Number of Officers Completing JPME Appearing Before the FY86-95 Promotion Boards (O-6), By Designator and Level, Phase, and Source of JPME.

JPME		DESIGNATORS				TOTAL
		1110	1120	1310	1320	
LEVEL		INTERMEDIATE				
T Y P E	RESIDENT	136	0	209	81	426
	PHASE I/II	83	8	116	37	244
LEVEL		SENIOR				
T Y P E	RESIDENT	77	10	225	74	386
	PHASE I / II	71	2	40	17	130
LEVEL		INTERMEDIATE AND SENIOR				
T Y P E	NONRESIDENT	8	9	10	2	29
	EQUIVALENT	27	1	10	12	50
	PHASE II	8	1	12	4	25
	NO JPME	814	430	957	459	2660
TOTAL		1224	461	1579	686	3950
% WITH JPME		33%	7%	39%	33%	33%

Of course, not all 1285 officers with JPME who stayed to the O-6 Promotion Board were successful in promoting. Of those 1285, only 770 successfully promoted,

which amounts to a 60 percent promotion rate. The promotion rates for individual types, sources, and levels of JPME included: intermediate Phase I resident 57 percent, intermediate Phase I/II 51 percent, senior Phase I resident 65 percent, senior Phase I/II 66 percent, nonresident Phase I 52 percent, equivalent 60 percent, and Phase II 80 percent. Table 4.7 shows the number of URL officers completing JPME promoting during FY86-95 O-6 Promotion Boards by designator and level, phase, and source of JPME.

Table 4.7. Number of Officers Completing JPME Promoting During the FY86-95 Promotion Boards (O-6), By Designator and Level, Phase, and Source of JPME.

JPME		DESIGNATORS				TOTAL
		1110	1120	1310	1320	
LEVEL		INTERMEDIATE				
T Y P E	RESIDENT	73	0	128	42	243
	PHASE I/II	47	6	58	14	125
LEVEL		SENIOR				
T Y P E	RESIDENT	47	6	153	45	251
	PHASE I / II	47	1	32	6	86
LEVEL		INTERMEDIATE AND SENIOR				
T Y P E	NONRESIDENT	5	5	5	0	15
	EQUIVALENT	18	1	7	4	30
	PHASE II	6	1	10	3	20
	NO JPME	409	276	439	137	1261
TOTAL		652	296	832	251	2031
% WITH JPME		37%	7%	47%	45%	38%

One final observation about each of these files concerns the proportion of officers completing JPME from each of the communities. For the most part, the SWO, Pilot, and NFO communities maintain approximately the same proportion of officers with JPME, whereas the NUC community has a very small proportion of its officers with JPME as compared to the other three communities. This may occur for two possible reasons. First, the NUC community does not have as large a share of the JDAL as do the other communities. Second, the NUC community has in the past been denoted as having a severe shortage of officers.⁸⁵ Even though, the NUC community probably would like to have more officers with JPME, it may not have been able to send as many, due to the operational constraints imposed on the community. Combine this with the already constrained NUC career path and the consequences become apparent.

The following chapter (Chapter V) uses statistical analysis techniques to analyze the data sets in answering the question: How has JPME affected the URL Naval officer career. However, before turning to statistical techniques, the following section describes the methodology which was used to conduct the analysis.

E. METHODOLOGY

This Thesis analyzes the effect of JPME on an officer's likelihood of promotion. As a result of GNA, joint promotion objectives now appear more important than ever. Consequently, JPME is also more important to obtain. It would seem logical then, since JPME poses such a significant investment in a URL career, that the URL communities

⁸⁵ Department of Defense, Annual Report to Congress, GPO, Washington, DC, January 1990.

would only want to send their very best officers to these assignments -- those that are deemed to be the most promotable.

A number of studies have examined the best method of measuring quality of officers, and promotion continues to provide the best overall objective measure of quality. LOGIT models are designed for analyzing determinants of a categorical variable, and by its nature, promotion is a binary categorical variable. Therefore, promotion conveniently provides for use of maximum likelihood LOGIT models to estimate the probability of being promoted to the rank of O-5 or O-6.

A binomial LOGIT is an estimation technique for equations that involve dummy (0, 1) dependent variables. LOGIT models provide parameter estimates that prove difficult to interpret directly, since they represent the log of the odds ratio of being promoted per unit increase in the explanatory variable in question holding the other explanatory variables constant.⁸⁶ Odds refers to the ratio of the probability a choice will be made (P) divided by the probability it will not (1 - P). For a more in-depth discussion of LOGIT technique and theory, this author recommends (Studenmund, 1992).

Once the LOGIT regression coefficients have been estimated and interpreted, hypothesis testing and econometric analysis is undertaken in much the same way as for linear estimation techniques. The coefficients can be converted into marginal probabilities, P_i , by using formula 4.1 on the following page:

⁸⁶ Studenmund, A. H., Using Econometrics, Harper and Collins, Washington, DC, 1992.

$$P_i = B_i \times P (1 - P) \quad (4.1)$$

In this equation, (B) represents the LOGIT parameter estimate for a given explanatory variable, (P) represents the predicted probability of the event estimated from the sample data, and (P_i) represents the marginal probability.

In this analysis, both linear regression and non-linear LOGIT models have been estimated for final comparison between results. Several non-linear LOGIT models are specified and estimated using maximum likelihood techniques. Models were constructed for the entire population for both the Commander and Captain Promotion Boards. For these models, promotion is assumed to be a function of a number of independent variables. Specific variables in each model are introduced to control for different types of GRAD ED and JPME, the URL communities (SWO, NUC, PIL, NFO) as well as fiscal years during the period.⁸⁷ In particular, models in this analysis specify promotion as a function of the following variables:

1. Marital Status.
2. Pre-service academic performance
3. Age at officer commissioning.

⁸⁷ Initially, the promotion models were run using fiscal year dummy variables with FY90 as the base year. This technique was intended to show whether there were any significant differences in promotion between fiscal years. For the O-5 data set four years, FY86, FY87, FY88 and FY93 proved to be significantly different from FY90. For the O-6 data set, only one year, FY91 and FY92 proved to be significantly different from FY90. These fiscal year variables were then removed, and final models run without them. The results of these final models are shown in Chapter V.

4. Military service performance.
5. GRAD ED source.
6. GRAD ED utilization.
8. Joint duty assignment (JDA).
9. JPME (level, type, and source).
10. URL community

One final approach in analyzing the effect of JPME on promotion is to determine the marginal (i.e., added) effect of JPME on the probability of promotion. To analyze the marginal effects, a "notional person" technique is employed. Recalling a discussion of this technique in Chapter I, it was described as a way to derive an overall probability of a promotion for an average person from the population (i.e., "notional person"). Once established, this probability provides a baseline with which to determine the marginal effects (i.e., marginal probabilities) on promotion as a result of changing a single variable while keeping all other variables constant -- *ceteris parabis*. In this case, the variables of interest are those related to JPME. For this analysis, a Microsoft Excel spreadsheet was used to estimate the marginal probabilities for each of the four URL communities.⁸⁸

F. VARIABLE DEFINITION

This model uses promotion as its dependent variable, since it has been determined to be the most suitable "proxy" for measuring the effects of JPME on the performance of officers. With a properly specified model, one seeks to determine a cause and effect

⁸⁸ The particular spreadsheet technique used to estimate the marginal probabilities was developed by Dr. William Bowman of the U.S. Naval Academy.

relationship between independent variables and promotion. As such, independent variables have been chosen because they were determined to best hypothesize this cause and effect relationship. This determination was based upon the author's personal expectations as well as their use in previous studies (Bowman, 1996; Bowman-Mehay, 1995; Kovach, 1996). The following section contains a description of the variables used in the promotion models.

For the promotion models the dependent variable is a binary variable (PROMOTE), which takes a value of one (1) if an officer is selected for promotion to Commander (O-5) or Captain (O-6), and a value of zero (0) if an officer is not selected.

The first two independent or explanatory variables describe demographic information of the officer. The first demographic variable (MARRIED) is a binary variable which takes the value one (1) if an officer is married and a value of zero (0) if that officer is not married. The second variable (AGEO1) is a continuous variable which denotes an officer's age at time of commissioning.

The next four variables describe an officer's prior undergraduate academic performance. The first variable is (UGRDTECH) is a categorical variable, which takes on a value of one (1) if an officer completed a technical undergraduate degree, and zero (0) if an officer did not. The first of three APC variables, (APC1) is a categorical variable, which takes on a value of zero (0) through five (5), and reflects an officer's cumulative undergraduate grade-point average. The second APC variable, (APC2) is a categorical variable, which takes on a value of zero (0) through six (6), and reflects an officer's academic performance in calculus-related mathematics courses. The third APC variable,

(APC3) is a categorical variable, which takes on a value of zero (0) through five (5), and reflects an officer's academic performance in physics-related courses. In the case of these three APC variables, the coding is reversed -- the lower the APC variables, the higher an officer's performance in each of the respective areas.

The next three variables describe an officer's military performance. The first two variables are derived from an officer's performance evaluation, or fitness report (FITREP) data. The first variable (RAPPE12) is a categorical variable, which takes on a value of one (1) if an officer received a "recommendation for accelerated promotion" on any of his/her FITREPS during the rank of Ensign or LTJG, and zero (0) if that officer did not. The second variable (RAPPE3) is a categorical variable, which takes on a value of (1) if an officer received a "recommendation for accelerated promotion" on any of his/her FITREPS during the rank of Lieutenant (LT), and zero (0) if that officer did not. The third variable (TIMEO4) is a continuous variable, which indicates the how long an officer spent at the rank of O-4.

The next seven variables describe various aspects of an officer's source of graduate education attainment and subsequent utilization. The first variable (ANYGRAD) is a binary variable which takes on the value one (1) if an officer completed any type of graduate school degree, and zero (0) if that officer did not. The second variable (NITESCHL) is a binary variable which takes on the value one (1) if an officer completed a graduate degree on his/her own time and zero (0) if that officer did not. The third variable (SALVEREG) is a binary variable which takes on the value of one (1) if an officer completed a graduate degree from Salve Regina, College in Newport,

Rhode Island, and zero (0) if that officer did not. The fourth variable (NWCDEGR) is a binary variable which takes on the value of (1) if an officer received a graduate degree for completing the Naval War College, and zero (0) if that officer did not. The fifth variable (FFUNDNPS) is a binary variable which takes on the value of (1) if an officer completed a graduate degree from the Naval Postgraduate School (NPS), and zero (0) if that officer did not. The sixth variable (FFUNDCIV) is a binary variable which takes on the value of (1) if an officer completed a graduate degree under the Navy's Fully Funded Civilian Institutions Program, and zero (0) if that officer did not. The seventh variable (UTILIZE) is a binary variable which takes on the value of (1) if an officer has received credit for utilizing his/her graduate subspecialty and zero (0) if that officer did not.

The next nine variables describe an officer's JPME completion level, type, and source as well as his/her JDA assignment history. The first variable (ANYJPME) is a binary variable which takes on a value of one (1) if an officer has completed any JPME, and zero (0) if that officer has not. The second variable (INTRES) is a binary variable which takes on the value of one (1) if an officer has completed Intermediate Resident Phase I JPME, and zero (0) if that officer has not. The third variable (SRRES) is a binary variable which takes on the value of one (1) if an officer has completed Senior Resident Phase I JPME, and zero (0) if that officer has not. The fourth variable (NONRES) is a binary variable which takes on the value of one (1) if an officer has completed Nonresident Phase I JPME, and zero (0) if that officer has not. The fifth variable (PHIIONLY) is a binary variable which takes on the value of one (1) if an officer has completed Phase II JPME at AFSC after June 1990, and zero (0) if that officer has not.

The sixth variable (BOTHJR) is a binary variable which takes on the value of one (1) if an officer has completed Phase I/II JPME at AFSC before June 1990, and zero (0) if that officer has not. The seventh variable (BOTHSR) is a binary variable which takes on the value of one (1) if an officer has completed Phase I/II JPME at National War College or the Industrial College of the Armed Forces, and zero (0) if that officer has not. The eighth variable (EQUIV) is a binary variable which takes on the value of one (1) if an officer has been granted Phase I credit for completion of one of the CJCS approved JPME Equivalents (FEF and Foreign Service Colleges), and zero (0) if that officer has not. The final variable (JDA) is a binary variable which takes on the value of one (1) if an officer has completed an assignment on the JDAL, and zero (0) if that officer has not.

The last four variables describe an officer's warfare designation. The first variable (SWO) is a binary variable which takes on the value of one (1) if an officer is designated a Surface Warfare Officer, and zero (0) if that officer is not. The second variable (NUC) is a binary variable which takes on the value of one (1) if an officer is designated a Nuclear Submarine Warfare Officer, and zero (0) if that officer is not. The third variable (PIL) is a binary variable which takes on the value of one (1) if an officer is designated a Pilot, and zero (0) if that officer is not. The fourth and final variable (NFO) is a binary variable which takes on the value of one (1) if an officer is designated a Naval Flight Officer, and zero (0) if that officer is not.

Not all variables described above are used in each promotion models. Appendix N and O provide a listing of all variable names and definitions used in each of the O-5 and O-6 promotion models. The next chapter, Chapter V addresses empirical analysis.

V. EMPIRICAL ANALYSIS

A. INTRODUCTION

The primary goal of this Thesis is to examine the effects of completing JPME on the probability of promotion of the URL Naval officer to O-5 and O-6. This chapter uses a three-step approach to achieve this goal. The first step consists of comparing variable means between designators from the O-5 and O-6 data sets. The second step is devoted to LOGIT and linear regression results from the respective Commander and Captain data sets. The third and final step is devoted to estimating marginal probabilities of promotion across all four URL communities.

B. COMPARISON OF VARIABLE MEANS

As mentioned in an earlier section of this thesis, a number of differences can result when comparing the effects of different independent variables across communities. One possible way to see a difference in the effects is by examining the means of the common explanatory variables across URL communities and between data sets. For the explanatory variables defined in the previous chapter, this is done for the O-5 and O-6 Promotion Board data sets, and the results are shown in Table 5.1.

Table 5.1. Variable Means by Designator and Community for O-5 and O-6 Boards.

	URL COMMUNITIES							
	SWO (1110)		NUC (1120)		PILOT (1310)		NFO (1320)	
VARIABLES	O-5	O-6	O-5	O-6	O-5	O-6	O-5	O-6
MARRIED	0.86	0.93	0.9	0.96	0.9	0.94	0.88	0.95
AGEO1	22.9	22.3	22.6	22.3	22.5	22.4	23.5	22.8
UGRDTECH	0.48	0.29	0.89	0.64	0.52	0.32	0.47	0.36
APC1	2.48	3.78	1.59	2.49	2.51	3.68	2.51	3.19
APC2	2.98	3.12	1.49	1.49	2.97	3.36	3.12	3.49
APC3	3.55	3.54	1.4	1.45	3.43	3.71	3.69	3.9
RAPPED12	0.49	0.15	0.48	0.18	0.34	0.11	0.34	0.15
RAPPED3	0.23	0.42	0.28	0.32	0.21	0.31	0.23	0.37
ANYGRAD	0.42	0.6	0.28	0.34	0.33	0.46	0.43	0.52
UTILIZE	0.09	0.07	0.05	0.07	0.05	0.08	0.09	0.13
ANYJPME	0.14	0.31	0.04	0.06	0.14	0.37	0.14	0.3
JDA	0.1	0.24	0.07	0.11	0.05	0.17	0.11	0.26
N	2069	1224	874	461	2015	1579	1571	686

A number of differences in the variable means are apparent in Table 5.1. For example, on average NUC officers tend to complete JPME less often than other communities. Also, on average NUC officers tend to complete fewer JDAs than other communities. One explanation for why NUC's tend to complete less JPME and JDAs, because the NUC community's share of the JDAL is much smaller than that of the other communities. Even though, on the surface there may seem to be differences in means of

the variables, this doesn't necessarily suggest there will be significant differences in the effects of JPME on promotion across communities.

To actually determine the effects of JPME on promotion, there are two potential techniques. The first method is to specify and run a single model, including community specific variables in the model. This method allows determination of whether differences in promotion are significant across communities relative to a base case. In this analysis, the base case is the SWO community. The second technique is to run four separate models -- one for each of the URL communities. This author has chosen to employ the former technique, the results of which are shown in the following section.

C. LOGIT AND LINEAR REGRESSION RESULTS

Two basic LOGIT and linear regression models are specified and estimated: one for officers appearing before the O-5 Promotion Board and one for officers appearing before the O-6 Promotion Board. The results are presented in the following sections.

1. Commander Data Set

A LOGIT model, using the variables defined in the previous chapter, was specified for the O-5 Promotion Board. A linear regression model was also specified using the same variables to compare with the LOGIT results. In each of these models, the SWO community is the reference case. Table 5.2 shows results from both the LOGIT and linear regression models used to analyze the effects of JPME on promotion to O-5 for URL Naval officers.

Table 5.2. Estimated Effects on URL Officer Promotion to O-5.

		LINEAR		LOGIT	
VARIABLES		PARAMETER	T-STAT	PARAMETER	T-STAT
INTERCEPT*		1.2122	17.445	3.5519	9.95
MARRIED		0.0916	5.404	0.4597	5.29
AGEO1		-0.0347	-12.357	-0.1719	-11.87
UGRDTECH		-0.0451	-3.174	-0.2447	-3.23
APC1		-0.0245	-3.791	-0.1319	-3.84
APC2		-0.005	-0.994	-0.9279	-1.05
APC3		-0.0089	-1.735	-0.0504	-1.82
RAPPED12		0.1979	17.508	1.0655	16.83
RAPPED3		0.2108	15.554	0.9927	14.48
NITESCHL		0.0399	1.826	0.2144	2.29
SALVEREG		0.1194	2.918	0.6667	2.84
NWCDEGR		0.0871	1.826	0.4734	1.17
FFUNDNPS		0.0865	5.292	0.479	5.26
FFUNDCIV		0.0803	2.01	0.4798	2
UTILIZE		-0.1072	-4.544	-0.5942	-4.74
ANYJPME		0.0155	0.866	0.082	0.86
JDA		-0.054	-2.716	-0.2859	-2.79
NUC		0.0707	3.507	0.4194	3.75
PIL		0.0828	5.886	0.4323	5.75
NFO		0.0245	-1.646	-0.1044	-1.37
SAMPLE SIZE		6465		6465	
R	Concordance	0.1532		73.4	
* Dependent Variable: Promotion to O-5 (Commander) Note: Asymptotic Wald chi-square ("T ² ") statistics reported for LOGIT. Coefficients significant at the 10% level are bolded.					

Columns 2 and 3 indicate the estimated coefficients for the linear and LOGIT regression models, respectively. All independent variables in the model are significant with the exception of three -- APC2, ANYJPME, and NFO. Importantly, this shows that JPME does not have a significant effect on promotion to O-5 for URL Naval officers -- regardless of the level, phase, or source of JPME. This could result for two possible reasons. One, there may not have been enough officers with JPME at the O-5 Board to provide enough variation to ascertain whether JPME has a significant effect on promotion. One can see from Table 5.1, for example, that only four percent of the nuclear officers had any JPME at the of the O-5 Promotion Board. In addition, less than fifteen percent of the other three groups have any JPME at that time also. Two, the criteria for the O-5 Promotion Board may not consider JPME as a significant factor for promotion. This stands to reason, because at the O-5 level, the most important milestone of any URL officer is screening for "command at sea." Consequently, JPME would not necessarily be considered a key criteria at this point.

In contrast, based on the data, it seems the positive impact of a graduate degree continues through the O-5 promotion board -- regardless of the type of degree. The 1974 DON Officer Professional Development Study (DON, 1974) suggested "a graduate degree is intended to take an officer through the first half of his/her career." It would seem, then, that promotion to O-5 might mark the half-way point in a URL Naval officer career. Even though, O-5 might seem rather late in a career to be considered half-way.

2. Captain Data Set

A LOGIT model, using the variables shown in the previous chapter, was specified for the O-6 Promotion Board. A linear regression model was also specified using the same variables to compare with the LOGIT results. In each of these models, with the exception of the SWO community, variables were included for each of the URL communities. Table 5.3 shows results of both the LOGIT and linear regression models used to analyze the effects of JPME on promotion to Captain for URL Naval officers.

Columns 2 and 3 indicate the estimated coefficients for the linear and LOGIT regression models, respectively. All independent variables in the model are significant with the exception of six -- UGRDTECH, APC3, ANYGRAD, NONRES, BOTHINT, EQUIV and PIL. Importantly, GRAD ED does not seem to have a significant effect on promotion to O-6 for URL Naval officers -- regardless of the type of degree. Perhaps, one possible reason is that GRAD ED is no longer a discriminating criteria for the O-6 Promotion Board -- at this point in a URL Naval officer career the discriminating criteria may shift to JPME.

Table 5.3. Estimated Effects of JPME on URL Officer Promotion to O-6.

TABLE 5-15. ESTIMATED EFFECTS OF TIME ON CASE OFFICER PROMOTION TO O-6.					
		LINEAR		LOGIT	
VARIABLES		PARAMETER	T-STAT	PARAMETER	T-STAT
INTERCEPT*		1.7617	9.49	5.971	6.83
MARRIED		0.1409	4.05	0.631	3.97
AGEO1		-0.018	-3.05	-0.084	-3.13
UGRDTECH		-0.0215	-1.09	-0.09	-1.08
APC1		-0.0273	-2.72	-0.127	-2.79
APC2		-0.0146	-1.88	-0.065	-1.95
APC3		0.0067	0.78	0.032	0.84
RAPPED12		0.1146	4.75	0.541	4.85
RAPPED3		0.113	6.55	0.508	6.59
TIMEO4		-0.1589	-7.03	-0.752	-6.99
ANYGRAD		0.0191	1.04	0.084	1.01
UTILIZE		-0.0545	2	-0.244	-1.99
INTRES		0.0854	3.1	0.375	3.02
SRRES		0.1716	5.97	0.783	5.86
NONRES		-0.114	-1.21	-0.512	-1.17
PHIIONLY		0.1756	1.79	1.021	1.88
BOTHJR		-0.0004	-0.01	-0.002	-0.01
BOTHSR		0.1922	4.24	0.892	4.15
EQUIV		0.083	1.13	0.392	1.15
JDA		-0.1594	-7.86	-0.724	-7.82
NUC		0.1095	3.35	0.491	3.31
PIL		-0.0008	-0.04	0.001	0.01
NFO		-0.1509	-6.09	-0.687	-6.05
SAMPLE SIZE		3337		3337	
R	Concordance	0.1129		69.1	
* Dependent Variable: Promotion to O-6 (Captain) Note: Asymptotic Wald chi-square ("T ² ")statistics reported for LOGIT. Coefficients significant at the 10% level are bolded.					

JPME completed in some form, has a significant effect on promotion to O-6. This is particularly true when an officer completes either intermediate resident Phase I (INTRES), senior resident Phase I (SRRES), Phase II (PHIIONLY), or senior Phase I/II (BOTHSR). According to the results of this study, however, there are three forms of JPME that have no significant impact on promotion to O-6. These are nonresident Phase I, equivalents (FEF and foreign Service colleges), and intermediate Phase I/II (combined).

As far as nonresident and the equivalents are concerned, their insignificance possibly results from the fact that very few officers are able to complete either of these forms of JPME. However, the insignificance of these results does not necessarily imply that by completing any of these forms they do not in some way contribute to a URL Naval officer career. On the contrary, they actually fulfill one of two prerequisites for assignment to a JDA -- JPME Phase I being one of those prerequisites. Therefore, nonresident Phase I JPME and the equivalents actually provide an important alternative to completing Phase I JPME, regardless, of their insignificance with respect to promotion.

As far as intermediate Phase I/II is concerned, its insignificance possibly results from an noticeable difference in the quality of officers assigned to JPME and JDAs before 1989 and after 1989. As mentioned in (Harrell, 1996 and Kovach, 1996), prior to 1989 the quality of officers assigned to JPME and JDAs apparently was not of the same quality assigned after 1989.

Overall, these results suggest the existence of a "critical point" point in the URL Naval officer career where JPME and graduate education can actually be considered substitutes for one another. This "critical point" seems to originate following the O-5

Promotion Board. At this "critical point," a trade-off occurs between the effects of JPME and GRAD ED on promotion of URL Naval officers.

Interestingly enough, the trade-off between JPME and GRAD ED occurs at a stage in the URL Naval officer career when the primary focus shifts from one of "community-specific" training, to as (Builder, 1989) refers, a blending of a wide range of skills in the officer corps. It is at this same change-over point that the concept of "jointness" finally emerges as a priority in the URL Naval officer career. Although, in some ways the Navy's approach to JPME may be construed by some as not in keeping with the overall intent of the continuum of JPME provided for in the OPMEP, it would seem the Navy's overall approach is in keeping with its own organizational objectives. Although, well beyond the scope of this thesis, a related question that emerges is: How, then, can the Navy incorporate the joint educational continuum policies of the OPMEP into the URL Naval officer career, and still maintain career efficiency and effectiveness?

D. MARGINAL EFFECTS OF JPME ON PROMOTION

Although, the linear regression coefficients can be interpreted directly as estimates of marginal probabilities, they do not provide the most accurate estimates. The LOGIT coefficients can be transformed into marginal probabilities which have superior descriptive capabilities. The procedure for transforming the coefficients into marginal probabilities was briefly described in a previous chapter. This section provides a more detailed summary of the transformation process. There are a number of techniques to transform LOGIT coefficients into marginal probabilities. As indicated above, this analysis uses an Excel spreadsheet to compute this transformation. A copy of the Excel

spreadsheet layout used to determine the marginal probabilities for both the O-5 and O-6 Promotion Boards can be found in Appendix P and Q.

The procedure for transforming the independent variable LOGIT coefficients into marginal probabilities is performed in the following manner. First, the explanatory dummy variables (0,1) are all set to zero, and the continuous variables are set to the mean for the population being considered. This process establishes a baseline probability of promotion for a "notional person" from the population in question. In the case of this analysis, the population just so happens to be the SWO community. Figure 5.1 shows the "notional SWO" as: single, age 23 at commissioning, has average APCs and a nontechnical undergraduate degree, has not completed a graduate degree, JPME of any kind, a JDA, nor a subspecialty utilization tour.

In the next step each explanatory variable is changed while holding the other variables constant. In the case of the dummy variables, they are changed from zero to one and the continuous variables are given a unit increase in value. The probability of promotion is noted both before and after the variable is changed. The difference in these probabilities provides the resulting marginal probability (marginal effect) for that particular variable. The variable is then set back to its original value, and the same process of changing variables continues in succession for the rest of the variables. In this manner, the baseline probability of promotion for a "notional person" acts as a reference probability from which all marginal probabilities are calculated.

This method of estimation was used to calculate the marginal probabilities for the four URL communities for the O-5 and O-6 Promotion Boards shown in Tables 5.4 and

5.5. For example, column 2 shows for a "notional SWO" appearing before the FY1985-1994 O-5 Promotion Boards, the average probability of promotion is 65 percent. A SWO with the same characteristics, and completing a graduate degree from Salve Regina College (SALVEREG) while attending the Naval War College, has a 15 percent higher probability of promotion to O-5 (i.e., 75 percent). For that same "notional SWO" appearing before the FY1985-1994 O-6 Promotion Boards, the average probability of promotion is 53 percent. A SWO with the same characteristics, but completing intermediate Phase I resident (INTRES) JPME, has an 8 percent higher probability of promotion to O-6 (i.e., 61 percent). In each of these examples, the SWO is able to maximize his/her probability of promotion to O-5 and O-6 through the simultaneous combination of these two forms of human capital investment.

Table 5.4. Marginal Effects of Promotion to O-5 by Community.

VARIABLE	SWO (1110)	NUC (1120)	PILOT (1310)	NFO (1320)
OVERALL* PROMOTION PROBABILITY	65%	76%	71%	57%
MARRIED	10%	11%	11%	9%
AGEO1	-3%	-4%	-4%	-3%
UGRDTECH	-5%	-6%	-6%	-4%
APC1	-3%	-3%	-3%	-2%
APC2	-1%	-1%	-1%	-1%
APC3	-1%	-1%	-1%	-1%
RAPPED12	25%	25%	26%	24%
RAPPED3	23%	24%	24%	22%
NITESCHL	4%	5%	5%	4%
SALVEREG	15%	16%	16%	14%
NWCDEGR	10%	12%	12%	9%
FFUNDNPS	10%	12%	12%	10%
FFUNDCIV	10%	12%	12%	10%
UTILIZE	-10%	-14%	-13%	-9%
ANYJPME	2%	2%	2%	1%
JDA	-5%	-7%	-7%	-5%
N	2069	874	2015	1571

Note: Overall promotion rates were calculated from O-5 data set for period 1986 to 1994.
Marginal probabilities shown as increases (+) or decreases (-) in percentage points.

The results in Table 5.4 show that by completing any type of advanced degree a URL officer is able to maximize his/her the probability of promotion to O-5. Once again, the highest marginal probability amongst the advanced degrees is achieved by those officers completing a graduate degree at Salve Regina College in Newport, RI, while a graduate degree from the Naval War College provides a substantially smaller marginal probability of promotion.⁸⁹ The apparent difference in marginal probabilities between an advanced degree from Salve Regina and one from the Naval War College may reflect a potential impact of the Navy's decision to accredit the Naval War College in 1991. However, one cannot be certain of this effect. On the other hand, by completing any level, phase or source of JPME a URL officer does not realize an appreciable impact on his/her probability of promotion to O-5.

⁸⁹ The data does not reflect grandfathering of advanced degrees to NWC graduates during the period of 1985 to 1991. Also, the data does not show any officers as having advanced degrees from both Salve Regina and NWC.

Table 5.5. Marginal Effects on Promotion to O-6 by Community.

VARIABLE	SWO (1110)	NUC (1120)	PILOT (1310)	NFO (1320)
OVERALL PROMOTION PROBABILITY	53%	64%	53%	37%
MARRIED	14%	16%	15%	11%
AGEO1	-2%	-2%	-2%	-1%
UGRDTECH	-2%	-2%	-2%	-1%
APC1	-3%	-3%	-3%	-2%
APC2	-1%	-2%	-1%	1%
APC3	1%	1%	1%	0%
RAPPED12	12%	13%	12%	9%
RAPPED3	11%	13%	12%	8%
TIMEO4	-13%	-17%	-13%	-8%
ANYGRAD	2%	2%	2%	1%
UTILIZE	-5%	-6%	-5%	-3%
INTRES	8%	9%	8%	6%
SRRES	18%	19%	18%	14%
NONRES	-9%	-12%	-9%	-6%
PHIIONLY	24%	24%	24%	19%
BOTHINT	0%	0%	0%	0%
BOTHSR	21%	22%	21%	16%
EQUIV	9%	10%	9%	6%
JDA	-13%	-17%	-13%	-8%
N	1224	461	1579	686

Note: Overall promotion rates were calculated from O-6 data set for period 1986 to 1994.
Marginal probabilities shown as increases (+) or decreases (-) in percentage points.

The results in Table 5.5 show that by completing any advanced degree a URL officer does not realize an appreciable increase in his/her probability of promotion to O-6. On the other hand, by completing some forms of JPME a URL officer is able to maximize his/her probability of promotion to O-6. However, there are two forms of JPME which apparently have either a negative impact or no effect at all on promotion. Particularly, by completing nonresident JPME a URL officer effectively decreases his/her probability of promotion; whereas, completing intermediate Phase I/II has no apparent impact on promotion to O-6.

These results show one possible impact from combining JPME and GRAD ED is to increase career efficiency and effectiveness. The previous example illustrates this point by showing a "notional SWO" can effectively maximize his/her probability of promotion to O-5 and O-6 by completing JPME and GRAD ED at the same time. A question worth mentioning is: Are there any other forms of JPME and GRAD ED that, when combined, result in a similar impact on the URL Naval officer career? In light this simple demonstration of the potential benefits from such an impact, this question merits further analysis.

In light of these results the next, and final chapter (Chapter VI) concludes this thesis by providing some summary remarks and recommendations for possible improvement to the DON's current policies and practices concerning JPME.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. INTRODUCTION

The statistical and empirical results of this thesis show that JPME has four primary impacts on the URL Naval officer career. The primary areas impacted include: completion, retention, promotion, and interaction with other forms of human capital investment (i.e., graduate education). This chapter provides a summary of these impacts drawing on the statistical and empirical analyses results presented in this thesis. The chapter also provides some recommendations and possible areas for further research concerning the overall effects of JPME on the URL Naval officer career.

B. CONCLUSIONS

1. Data Analysis

a. JPME Completion

Results from the data analysis in Chapter IV reveal there are various windows of opportunity in a URL career for completing JPME. The first window of opportunity typically occurs before the O-4 promotion board. Interestingly enough, the Navy is the only service that still allows its O-3s to complete JPME -- the other services require selection for O-4 before undertaking JPME. Statistical results of this analysis indicate the promotion rate of the 65 officers who completed JPME during this period was 68 percent, which is slightly lower than the 75 percent promotion rate for all O-4s in the data set. This statistic may indicate the potential for interaction between JPME and other forms of human capital investment at earlier stages in a URL Naval officer career.

Possible investments include: graduate education and community-specific training. In light of the career-long continuum of education outlined in the OPMEP (CJCS, 1996), and the NPS successful initiative establishing itself as an institutional source of JPME, further analysis of early completion of JPME in the Navy is clearly warranted.

The second window of opportunity for completing JPME typically occurs between the 10 and 15 year point in a career (i.e., between the O-4 and O-5 Promotion Boards). This period is marked by the greatest overall percentage of JPME completion from the three data sets. Appendix B, C, and D show an explicit provision made for JPME during this period in all URL officer career patterns. Historically, these completion results reflect this period as optimal for completing JPME.

The third window of opportunity for completing JPME occurs between the 15 and 22 year point in a career (i.e., between the O-5 and O-6 Promotion Board). This period is marked by the second greatest overall percentage of JPME completion from the three data sets. Again, Appendix B, C, and D show an explicit provision made for JPME during this period in all URL officer career patterns. Historically, these completion results reflect this period as the second most optimal period for completing JPME.

b. JPME Retention

Results from the data analysis in Chapter IV reveal those officers completing JPME show an extremely high likelihood of retention in the Navy. During the first and second windows of opportunity described above, all officers completing JPME stayed in the Navy through subsequent promotion boards. Additionally, during the last window of opportunity, only 3 percent of the officers completing JPME elected to

leave the Navy prior to consideration for O-7. This statistic is not surprising, since the O-6 Promotion Board usually occurs after the 20 year mark in a career, which corresponds with the retirement eligibility age for most officers. Reasonably, one may expect to observe Naval officers leaving the Service at this point in their career. Unfortunately, due to the nature of the data, it proved very difficult to determine when the officers leaving during the final window actually completed JPME. However, one might be safe in assuming the officers leaving during the last window did not complete JPME during the same period.

2. Empirical Results

The results from the empirical analysis in Chapter V reveal the impacts of JPME on promotion vary depending upon promotion board level. The impact of completing any form of JPME has been insignificant for promotion to O-5. However, the impact of completing any form of JPME has been significant for promotion to O-6. Although, this same impact has not necessarily applied to intermediate Phase I/II completion nor for nonresident and equivalent forms of JPME.

Concerning past insignificance of intermediate Phase I/II completion, one possible explanation may be found in the selection processes that existed prior to emphasis being placed on them by GNA. This is highlighted by the comments from the RAND Study found in Chapter II of this analysis as well as results from (Kovach, 1996). Both indicate the quality of officers assigned to JPME and JDAs was suspect prior to 1989.

Concerning past insignificance of equivalent programs, one possible explanation may be that very few officers are able to complete these forms of JPME. This is especially true

of the FEF Programs, which traditionally have been highly selective and very competitive. In the past, one benefit derived from these programs was Phase I JPME credit. Now that these programs are scheduled to lose Phase I credit, a question that bears mention is: Without the added benefit of Phase I JPME credit, how will the Navy continue to attract high quality officers to the FEF Programs? This is another area that warrants further study.

Concerning past insignificance of nonresident programs, one possible reason may be officers perceive that nonresident programs do not provide sufficient benefit to enhance performance during a career. As a result, very few officers may complete these programs. This perception is highlighted in previous Air Force studies by (Burroughs, 1989 and Stevens, 1991). Another reason may be a selection bias on the part of the Navy. The Navy may in fact be choosing the cream of the crop to complete resident JPME, leaving the others to complete nonresident programs. This situation may be cause for an overarching issue of equity -- a situation where some officers are considered to be the "haves" and others the "have nots." This concept of inequity is best described by Major Paul L. Tomlinson.

Today's officer selection process -- whether it be for promotion, command, or school -- is becoming a case of the "haves" and the "have nots." In some cases, those without certain prerequisites already behind them will most certainly fail the next selection opportunity.⁹⁰

⁹⁰ Tomlinson, Paul L., *How Joint Office Management Legislation is Dividing Our Officer Corps*, Marine Corps Gazette, Quantico, VA, October 1994.

In view of this quote, the question a relevant question is: Is there a perceived inequity between those officers chosen to complete resident JPME and those not? If so, what damage if any has been done to the morale and motivation of those officers not chosen for resident JPME? This issue was explored by (Burroughs, 1989) in the context of the Air Force, and would make for an equally interesting study in the Navy.

Even though, the nonresident and equivalents do not provide a significant increase in the probability of promotion to O-6, they are considered suitable substitutes to obtaining resident Phase I JPME. Consequently, they present an officer with an opportunity for assignment to Phase II JPME, which provides a significant increase in probability of promotion. Therefore, the cumulative nature of Phase I and Phase II JPME is an issue that warrants reinforcement at this point in the discussion.

The results also show another impact of JPME is an interaction with GRAD ED. Officers completing GRAD ED of any form prior to the O-5 board have a significantly greater probability of promotion to O-5. In contrast, those officers completing GRAD ED do not have a significantly greater probability of promoting to O-6. This result highlights the realization of a "critical point" in the URL Naval officer career, following the O-5 Promotion Board, marked by the substitution of GRAD ED with JPME. Prior to this point in the URL Naval officer career, the higher probability investment consists of all forms of GRAD ED. After this point in the URL Naval officer career, the higher probability investment shifts to some forms of JPME. This change-over point shows evidence of a shift in focus of the URL officer career from technical competencies to the more political-military, strategic and policy dimensions of operations.

3. Marginal Probabilities

The results of the marginal probability calculations show the increased probability of promotion from completing JPME measured across the different URL communities. Overall, these results suggest that to maximize the probability of promotion to O-5 and O-6, respectively, an officer would simply need to complete graduate education prior to the O-5 Promotion Board, and resident JPME prior to the O-6 Promotion Board. The opportunity to complete both of these investments during a career often proves difficult, especially, in light of the critical balance that exists between competing priorities in a URL Naval officer career. Based on this analysis, there are a number of possible combinations of JPME and GRAD ED that can be accomplished. The most effective methods available to combine JPME and GRAD ED currently include:

1. While completing JPME at a Service school, complete a graduate degree:
 - a. From an affiliated University (e.g., Salve Regina).
 - b. From the Service school (e.g., NWC).
2. While completing GRAD ED at NPS, complete:
 - a. Nonresident (correspondence or seminar) JPME.
 - b. The NPS JEEP.⁹¹

This discussion has presented several methods to increase career efficiency and effectiveness by combining JPME and GRAD ED. Each method provides an added benefit of allowing more time in a career to concentrate on the core competencies of

⁹¹ This option is not available to all NPS students. Phase I JPME credit for completing the NPS JEEP only applies to select NPS National Security Affairs curricula.

community-specific training. In light of this discussion, exploring additional methods of combining or streamlining JPME and GRAD ED in a URL career merit further analysis.

C. OVERALL CONCLUSIONS

The initial background discussion in this study reveals the Navy believes its peacetime mission is more imminently strategic than the other Services'. This basic belief stems from the Navy's peacetime performance of global presence. Thus, it's this primary emphasis on operational mission completion which acts as the driving force behind the building-block approach to a URL Naval officer career -- with "command at sea" being seen as the ultimate prize. The somewhat paradoxical implication of this statement is that "good Navy officers are less likely to focus on the strategic importance of their mission than on engineering."⁹² The net result is a Navy organizational culture that places very little reliance upon "jointness."

Over the years, service culture had evolved to a point where some members of Congress viewed it as dysfunctional. In 1986, Congress intervened to change service culture by passing legislation -- the result was the GNA. To provide for this change, the JSO career path was born, and to ensure quality officers became JSOs, GNA imposed a number of career requirements on the Services. The Navy has had to come to grips with balancing the additional requirements of GNA in a URL Naval officer career. For the Navy, it has become what this author refers to as a "career balancing act." The following

⁹² Freihman, George, *The Future of War: Power, Technology and American World Dimensions in the 21st Century*, Crown Publishers, New York, 1996.

depiction shows a presumed balancing between different forms of human capital investment required to efficiently and effectively manage a URL Naval officer career.

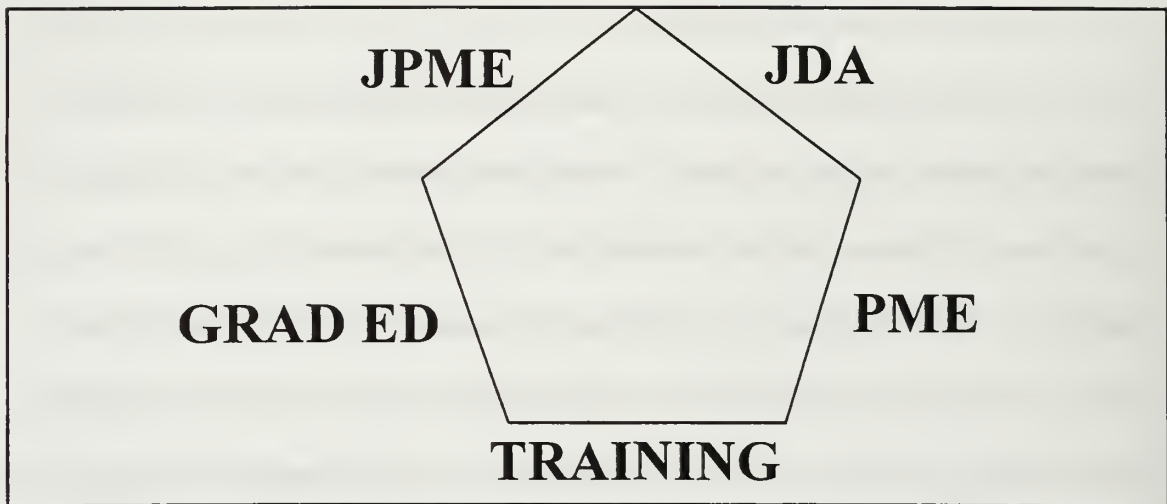


Figure 6.1. Career Balancing Act.

As one can readily see, the sides of the pentagon in Figure 6.1 have been drawn of equal length. Admittedly, at different times in a career one of these sides may require greater emphasis than the other. However, the challenge of career management is not to let the emphasis on any one side become so focused that the pentagon rendered incapable of functioning. There are many things to consider when providing a balance in the URL Naval officer career. This analysis suggests to provide a balance in the area of JPME, one must consider four primary effects, which include: completion, retention, promotion and interaction with other forms of human capital investment (i.e., graduate education).

In conclusion, throughout this analysis completion of JPME has proven its benefit to both the individual and the DON. Acting as a signalling device, for the officer, it demonstrates his/her interest in future professional development, and as treated by the DON, it represents organizational faith in the officer's future potential for discharging

responsibilities associated with high level command and staff positions. This overall concept is in keeping with the Navy's stated goals of JPME. Consequently, the mutual agreement provided by both parties when entering into the human capital investment of JPME, results in a win-win situation for everyone involved. The overriding issue remains how to manage the complexities of these human capital investments by minimizing the impacts to the interested parties in order to provide maximum efficiency and effectiveness.

D. RECOMMENDATIONS

This thesis marks a first attempt at applying the CJCS JPME structure to determine the overall effect of JPME on the URL Naval officer career. Suffice it to say that JPME is a fairly complex issue, especially, in the context of the URL Naval officer career management. Admittedly, this analysis only managed to scratch the surface of what will continue to be an extremely complex issue. However, it provides some important insight into the impacts of JPME on the URL Naval officer career. The following recommendations are provided in view of this analysis.

1. The results of this thesis are important, because they provide additional insight into one aspect of URL officer career management which has seen very little quantifiable analysis. Therefore, these results should be made readily available to all Naval officers -- G/FO and regular officers alike.

2. Service School Codes (SSCs) should be updated to include all current levels, phases, and sources of JPME, thereby, allowing effective and efficient monitoring of important human capital resource allocations. Particular areas of emphasis include:

- a. Individual SSCs for each nonresident source.
- b. SSC distinctions between intermediate and senior level Phase II.
- c. SSC distinctions between intermediate and senior level nonresident JPME.
- d. SSC for Naval Postgraduate School JEEP.

3. A separate JPME selection process should be implemented which gives consideration to all levels, phases, and sources of JPME. If the foregoing were to be implemented, the NPS initiative to provide JPME will present considerable difficulty in implementing that regard. However, effective resource allocation and appropriate management procedures indicate a separate selection board process may be necessary.

E. FURTHER RESEARCH

In spite of its complexity, JPME is an important topic for future research.

Therefore the following areas serve as areas warrant further research concerning JPME:

1. Models to determine the effect of JPME on promotion should be developed for each URL community. This method of analysis will allow a more accurate comparison of the effects of JPME across communities. By running separate models, additional insight into the significance of the LOGIT coefficients would be provided. In turn, it is possible to link the significance of LOGIT coefficients to marginal probability calculations, providing greater analytical insight into their validity.

2. Future analyses of the effects of JPME should be expanded in focus to include additional years beyond the period spanning from 1986 and 1994. Additionally, in 1995, the Naval Postgraduate School Joint Elective Education Program (JEEP) was added as

another source of JPME, greatly expanding the horizons of JPME. Future studies should also consider the effects of this new source of JPME.

3. Additional research should be performed in the region where JPME and graduate education seemingly begin to interact -- at the O-5 and O-6 level. The transition that takes place in the URL career from technical competence to the political-military, strategy and policy dimension is becoming increasingly blurred by the blending of these two sources of human capital investment. To effectively provide for the transition between these levels in a career, it is necessary to know more about the interaction that takes place at this level between JPME and graduate education. Additional research in this area may provide further insight into additional methods of streamlining the JPME and graduate education processes, thereby providing greater efficiency, while at the same time maintaining overall career effectiveness.

4. Additional research should be performed to determine the nature of interaction between Phase I and Phase II JPME and JDA. As a result of GNA in 1986, these added milestones have become significant hurdles to navigate in a career. Further analysis would provide additional insight into possible ways to effectively navigate these hurdles while at the same time adhering to Title X personnel requirements of GNA.

APPENDIX A. OFFICER PROFESSIONAL MILITARY EDUCATION

OFFICER PROFESSIONAL MILITARY EDUCATIONAL FRAMEWORK					
GRADE	CADET/MIDSHIPMAN	0-1/O-2/O-3	0-4	0-5/O-6	0-7 TO 0-10
LEVEL OF MILITARY EDUCATION	PRE-COMMISSIONING	PRIMARY	INTERMEDIATE	SENIOR	GENERAL/FLAG
EDUCATIONAL INSTITUTIONS AND COURSES	SERVICE ACADEMIES ROTC OCS/OTS	- Basic & Advanced Branch or Warfare Specialty Schools - Primary Level PME Courses	- Air Command & Staff College - Army Command & General Staff College - College of Naval Command & Staff - Marine Corps Command & Staff - Naval Postgraduate School - Armed Forces Staff College (Joint & Combined Staff Officer School)	- Air War College - Army War College - College of Naval Warfare - Marine Corps War College - Industrial College of the Armed Forces - National War College - Armed Forces Staff College (Joint & Combined Warfighting School)	- Capstone - Joint Flag Officer Warfighting Course - Joint Forces Air Commander Course - Seminars/Courses
LEVEL OF WAR EMPHASIZED	CONCEPTUAL AWARENESS OF ALL LEVELS	TACTICAL		OPERATIONAL	
FOCUS OF MILITARY EDUCATION	INTRODUCTION TO SERVICES' MISSIONS	- Service Values - Warfare Specialty/ Branch Operations - Leadership - Staff Skills	- Operational Art - Joint Force Operations - Introduction to National Security and Military Strategy	Primary Emphasis: - Service Schools: National Military Strategy, Theater Strategy, & Campaigning - Joint Schools: National Security Strategy	- Theater-Level Unified, Joint, and Combined Operations
JOINT EMPHASIS	<i>Joint Introduction</i> - Organization for National Security - Capabilities of the US Armed Forces in the 21st Century Battlespace - JCS and CINCS: Origins and Organizations - Service Interaction - Joint Warfare Concepts and Philosophy	<i>Joint Awareness</i> - Joint Task Force Organization - Relation Between Joint and Service Doctrine	<i>PJE Phase I</i> - National Military Capabilities and Command structure - Joint Doctrine - Joint & Multinational Forces at the Operational Level of War - Joint Planning and Execution Process - Systems Integration at the Operational Level of War	<i>PJE Phase I</i> - National Security Strategy - National Planning Systems and Processes - National Military Strategy and Organization - Theater Strategy and Campaigning - Systems Integration in 21st Century Battlespace	- Integration of National Military Strategy with National Security Strategy - Integration of National Security Strategy with National Policymaking Requirements
FOCUS OF PJE PHASE II	Not Applicable	Not Applicable	- Integrated strategic deployment, employment, sustainment, and redeployment of forces.		Not Applicable

Note: 1. Joint schools identified by bold italics.

2. PJE Phases I and II are not applicable to these colleges.

3. Armed Forces Staff College teaches PJE Phase II only, primarily at the operational level.

4. Areas in this figure depicting emphasis devoted to each level of war are representative and do not display mandatory topics.

SOURCE: Officer Professional Military Education Policy (CJCS, 1996).

APPENDIX B. SURFACE WARFARE OFFICER CAREER PATH.

CAPT			TRAINING COMMAND FIFTH SHORE: MAJOR STAFF SUBSPECIALTY TOUR DC / JOINT TOUR ACQUISITION TOUR
	MAJOR COMMAND MAJOR PROGRAM		
CDR	FOURTH SHORE:		DC / JOINT TOUR ACQUISITION TOUR SUBSPECIALTY TOUR
	SR SVC COL/JPME	POST CMD SEA	
	CDR COMMAND	CDR CMPLX SEA	
	THIRD SHORE:		SUBSPECIALTY TOUR DC / JOINT TOUR TRAINING COMMAND MAJOR STAFF ACQUISITION TOUR
LCDR	SR SVC / PME		
	POST XO SEA TOUR		
	LCDR XO / CO TOUR	LCDR COMPLEX SEA TOUR	
LT	SECOND SHORE:		DC / JOINT TOUR SUBSPECIALTY TOUR TRAINING COMMAND
	JR SVC/PME		
	SPLIT DEPT HEAD TOUR	SINGLE DEPT HEAD TOUR	
	FIRST DEPT HEAD TOUR		
LTJG	FIRST SHORE:	STAFF RECRUITING PG SCHOOL	DIVISION OFFICER FOLLOW ON TOUR
	FIRST SEA TOUR DIVISION OFFICER AFLOAT		
ENSIGN	SWOS DIVISION OFFICER AND ENROUTE TRAINING		

SOURCE: Naval Officer Career Planning Guidebook

Table 1. Summary of the data sets used in the study	
Dataset	Description
1	1990-1999
2	2000-2009
3	2010-2019
4	2020-2029
5	2030-2039
6	2040-2049
7	2050-2059
8	2060-2069
9	2070-2079
10	2080-2089
11	2090-2099
12	2100-2109
13	2110-2119
14	2120-2129
15	2130-2139
16	2140-2149
17	2150-2159
18	2160-2169
19	2170-2179
20	2180-2189
21	2190-2199
22	2200-2209
23	2210-2219
24	2220-2229
25	2230-2239
26	2240-2249
27	2250-2259
28	2260-2269
29	2270-2279
30	2280-2289
31	2290-2299
32	2300-2309
33	2310-2319
34	2320-2329
35	2330-2339
36	2340-2349
37	2350-2359
38	2360-2369
39	2370-2379
40	2380-2389
41	2390-2399
42	2400-2409
43	2410-2419
44	2420-2429
45	2430-2439
46	2440-2449
47	2450-2459
48	2460-2469
49	2470-2479
50	2480-2489
51	2490-2499
52	2500-2509
53	2510-2519
54	2520-2529
55	2530-2539
56	2540-2549
57	2550-2559
58	2560-2569
59	2570-2579
60	2580-2589
61	2590-2599
62	2600-2609
63	2610-2619
64	2620-2629
65	2630-2639
66	2640-2649
67	2650-2659
68	2660-2669
69	2670-2679
70	2680-2689
71	2690-2699
72	2700-2709
73	2710-2719
74	2720-2729
75	2730-2739
76	2740-2749
77	2750-2759
78	2760-2769
79	2770-2779
80	2780-2789
81	2790-2799
82	2800-2809
83	2810-2819
84	2820-2829
85	2830-2839
86	2840-2849
87	2850-2859
88	2860-2869
89	2870-2879
90	2880-2889
91	2890-2899
92	2900-2909
93	2910-2919
94	2920-2929
95	2930-2939
96	2940-2949
97	2950-2959
98	2960-2969
99	2970-2979
100	2980-2989
101	2990-2999
102	3000-3009
103	3010-3019
104	3020-3029
105	3030-3039
106	3040-3049
107	3050-3059
108	3060-3069
109	3070-3079
110	3080-3089
111	3090-3099
112	3100-3109
113	3110-3119
114	3120-3129
115	3130-3139
116	3140-3149
117	3150-3159
118	3160-3169
119	3170-3179
120	3180-3189
121	3190-3199
122	3200-3209
123	3210-3219
124	3220-3229
125	3230-3239
126	3240-3249
127	3250-3259
128	3260-3269
129	3270-3279
130	3280-3289
131	3290-3299
132	3300-3309
133	3310-3319
134	3320-3329
135	3330-3339
136	3340-3349
137	3350-3359
138	3360-3369
139	3370-3379
140	3380-3389
141	3390-3399
142	3400-3409
143	3410-3419
144	3420-3429
145	3430-3439
146	3440-3449
147	3450-3459
148	3460-3469
149	3470-3479
150	3480-3489
151	3490-3499
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212	4100-4109
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217	4150-4159
218	4160-4169
219	4170-4179
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439	6370-6379
440	6380-6389
441	6390-6399
442	6400-6409
443	6410-6419

APPENDIX C. AVIATION OFFICER CAREER PATH

CAPT	SEQ CMD / FLAG		SENIOR SEA/SHORE - DC - SUBSPEC - JOINT - MAJ SHORE - AFLOAT STAFF	
	CAG	MAJOR SHIP CMD / MAJOR SHORE CMD		
CDR	JPME / JOINT / DC /STAFF / SHIP FRS CO / CV XO / NUC POWER			FOURTH SEA TOUR
	SQUADRON CO			
	SQUADRON XO			2ND SHORE - JPME TOUR - JOINT - DC - STAFF - SUBSP
	FRS / PXO TRAINING			
LCDR	SECOND SHORE TOUR JPME JOINT DUTY DC, STAFF		THIRD SEA TOUR SQUADRON DEPT HEAD	
	FRS			
	FRS			
LT	SECOND SEA TOUR SHIP SEA STAFF SQUADRON		FIRST SHORE TOUR FRS / TRACOM INST PG SCHOOL RECRUITING	
	FIRST SEA TOUR			SQUADRON BRANCH OFFICER DIVISION OFFICER
	LTJG			
ENS	FRS		FLIGHT TRAINING	
	FLIGHT TRAINING			

SOURCE: Naval Officer Career Planning Guidebook

APPENDIX D. SUBMARINE OFFICER CAREER PATH.

CAPT	MAJOR COMMAND				SECOND MAJOR COMMAND		
	POST COMMAND SHORE	MAJOR COMMAND				DC SHORE	
		POST COMMAND SHORE				MAJOR COMMAND	
CDR	SERVICE COLLEGE						
	COMMAND						
	PCO						
LCDR	PCO	XO	POST XO SHORE		XO		
			XO		POST DH SHORE		
	POST DH SHORE	NAV	NAV	WEPS	SLO	IMA RADCON	
LT	ENG		WEPS	ENG	ENG / NAV WEPS	WEPS / NAV	
	SOAC						
	POST JO SHORE TOUR / PG SCHOOL						
LTJG	FIRST SEA DUTY						
ENS	INITIAL TRAINING						

SOURCE: Naval Officer Career Planning Guidebook



APPENDIX E. ADDITIONAL QUALIFICATION DESIGNATOR (AQD)

AQD	DESCRIPTION AND CRITERIA
JS1	JPME GRADUATE: Graduates of National War College, ICAF or AFSC prior to 1 June 1990. Includes all June 1989 War College graduates plus Navy War college March (intermediate) and November graduates.
JS2	JOINT DUTY ASSIGNMENT(JDA) CREDIT: For completion of JDAL billet after January 1, 1987 or a previously qualifying billet.
JS3	JPME JOINT SPECIALTY OFFICER (JSO) NOMINEE: JPME graduate serving in or having served in JDAL. Does not mean will now, or in the future, be considered for JSO designation. Administrative AQD.
JS4	COS JOINT SPECIALTY OFFICER (JSO) NOMINEE: URL officer who has not graduated from JPME serving in or has served in JDAL. Does not mean will now, or in the future, be considered for JSO designation. Administrative AQD.
JS5	JOINT SPECIALTY OFFICER: Completed JPME and JDA JSO requirements, and has been selected by Navy JSO board, approved and designated by SECDEF.
JS6	JOINT DUTY EQUIVALENT CREDIT: For in-service billet joint service credit for pre 1 October 1986 tour. Counts as joint credit for Flag only, ends January 1, 1994.
JS7	PHASE I JPME GRADUATE: Graduate of any the U.S. Service colleges (between January 85 and January 89 and after January 90) designated Fellowship or Foreign Service Colleges.
JS8	PHASE II JPME GRADUATE: Graduate of AFSC after June 1990.
JS9	COS TAKEOUT: Officer designated a JSO based on COS takeout tour provision (2 year).

SOURCE: Perspective, January 1996/PERS-455.



APPENDIX F. INTERMEDIATE LEVEL RESIDENT SERVICE SCHOOLS.

SSC	INT	SR	DESCRIPTION
414	X		Naval War College, Command and Staff Course
700	X		Air Command and Staff College
718	X		U.S. Army Command and General Staff College
746	X		U.S. Marine Corps Command and General Staff College

SOURCE: Navy Officer Manpower and Personnel Classifications Manual

APPENDIX G. SENIOR LEVEL RESIDENT SERVICE SCHOOLS.

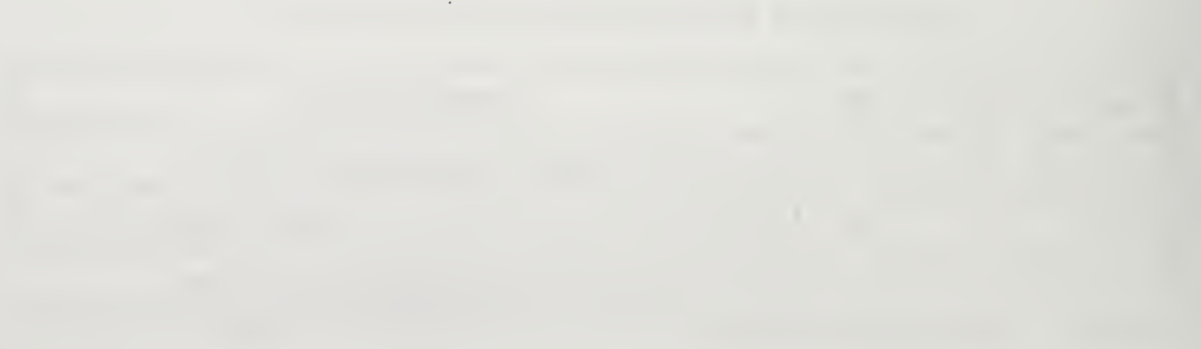
SSC	INT	SR	DESCRIPTION
419		X	Naval War College , Naval Warfare Course
704		X	Air War College
714		X	U.S. Army War College
745		X	U.S. Marine Corps War College

SOURCE: Navy Officer Manpower and Personnel Classifications Manual

APPENDIX H. NONRESIDENT SERVICE SCHOOLS.

SSC	INT	SR	DESCRIPTION
420	X	X	Naval War College, Correspondence Course
421	X	X	Naval War College, Off Campus Seminar Course
705	X	X	Air War College, Correspondence and Seminar

SOURCE: Navy Officer Manpower and Personnel Classifications Manual



APPENDIX I. FEDERAL EXECUTIVE FELLOWSHIP (FEF) PROGRAMS.

SSC	INT	SR	DESCRIPTION
401	X		White House Fellows Program
402		X	White House Fellows Program
403*	X	X	Federal Executive Fellowship Program (General)
430		X	Senior Seminar in Foreign Policy, State Department
432		X	Senior Officials in National Security, Harvard University
435		X	Military Fellowship Program (Pol-Mil), New York
*Note: Accounts for all FEF Programs not explicitly noted above.			

SOURCE: Navy Officer Manpower and Personnel Classifications Manual

APPENDIX J. INTERMEDIATE LEVEL JOINT SERVICE SCHOOLS.

SSC	INT	SR	DESCRIPTION
400	X		Armed Forces Staff College (Prior to June 1990)

SOURCE: Navy Officer Manpower and Personnel Classifications Manual

APPENDIX K. SENIOR LEVEL JOINT SERVICE SCHOOLS.

SSC	INT	SR	DESCRIPTION
408		X	Industrial College of the Armed Forces (ICAF)
410		X	National War College

SOURCE: Navy Officer Manpower and Personnel Classifications Manual

APPENDIX L. INTERMEDIATE AND SENIOR LEVEL JOINT SCHOOLS.

SSC	INT	SR	DESCRIPTION
424	X	X	Armed Forces Staff College (After June 1990)

SOURCE: Navy Officer Manpower and Personnel Classifications Manual

APPENDIX M. FOREIGN SERVICE SCHOOLS.

SSC	INT	SR	DESCRIPTION
420		X	NATO Defence College, Rome
440		X	Inter-American Defense College, Washington, DC
735		X	Royal College of Defence Studies, London
736		X	United Kingdom Joint Services Staff College, Lattimer
737	X		Royal Naval Staff College, Greenwich
738	X		Royal Air Force Staff College, Bracknell
739*	X	X	Foreign War College (General)
740	X		Canadian National Defence College, Ontario
750	X		French Naval War College, Paris
760	X		Spanish Naval War College, Madrid
761	X		Argentina Naval War College, Buenos Aires
762	X		Canadian Command and Staff College, Ottawa
763	X		Japanese Naval War College, Tokyo
764		X	Japanese National Defense College
765		X	Norwegian War College, Oslo
766	X		Republic of China Command and Staff College, Taipei
770	X		German Command and General Staff College, Hamburg
771	X		Indian National Defense Services Staff College
772	X		Peru Naval War College, Lima
773	X		Venezuela Naval War College, Caracas
774	X		Brazil Naval War College, Rio De Janiero
775	X		Uruguay Naval War College, Montevideo
776	X		Australian Joint Services Staff College, Canberra
* Note: Accounts for all Foreign Service Colleges not explicitly noted above.			

SOURCE: Navy Officer Manpower and Personnel Classifications Manual

APPENDIX N. LIST OF VARIABLES FOR O-5 PROMOTION MODEL

VARIABLE	DEFINITION
PROMOTE	0 if not selected for promotion 1 if selected for promotion
MARRIED	0 if not married 1 if married
AGEO1	Age at commissioning
UGRDTECH	0 if did not complete technical undergraduate major 1 if completed technical undergraduate major
APC1	Undergraduate GPA
APC2	Undergraduate Calculus Grades
APC3	Undergraduate Physics Grades
RAPPED12	0 if not recommended for accelerated promotion at O-1 or O-2 1 if recommended for accelerated promotion at O-1 or O-2
RAPPED3	0 If not recommended for accelerated promotion at O-3 1 if recommended for accelerated promotion at O-3
NITESCHL	0 if not completed graduate degree on own time 1 if completed graduate degree on own time
SALVEREG	0 if not completed graduate degree at Salve Regina College 1 if completed graduate degree at Salve Regina College
NWCDEGR	0 if not granted graduate degree at Naval War College 1 if granted graduate degree at Naval War College
FFUNDNPS	0 if not completed graduate degree at Naval Postgraduate School 1 if completed graduate degree at Naval Postgraduate School
FFUNDCIV	0 if not completed graduate degree at CIVINS Program School 1 if completed graduate degree at CIVINS Program School
UTILIZE	0 if not granted credit for utilizing subspecialty graduate degree 1 if granted credit for utilizing subspecialty graduate degree
ANYJPME	0 if not completed any JPME 1 if completed any JPME
JDA	0 if not completed assignment on JDAL 1 if completed assignment on JDAL

APPENDIX O. LIST OF VARIABLES FOR O-6 PROMOTION MODEL

VARIABLE	DEFINITION
PROMOTE	0 if not selected for promotion 1 if selected for promotion
MARRIED	0 if not married 1 if married
AGEO1	Age at commissioning
UGRDTECH	0 if did not complete technical undergraduate degree 1 if completed technical undergraduate degree
APC1	Undergraduate GPA
APC2	Undergraduate Calculus Grades
APC3	Undergraduate Physics Grades
RAPPED12	0 if not recommended for accelerated promotion at O-1 or O-2 1 if recommended for accelerated promotion at O-1 or O-2
RAPPED3	0 If not recommended for accelerated promotion at O-3 1 if recommended for accelerated promotion at O-3
TIMEO4	Time spent at the rank of O-4
ANYGRAD	0 if not complete any graduate degree 1 if completed any graduate degree
UTILIZE	0 if not granted credit for utilizing subspecialty graduate degree 1 if granted credit for utilizing subspecialty graduate degree
ANYJPME	0 if not completed any JPME 1 if completed any JPME
INTRES	0 if not completed Intermediate Resident Phase I JPME 1 if completed Intermediate Resident Phase I JPME
SRRES	0 if not completed Senior Resident Phase I JPME 1 if completed Senior Resident Phase I JPME
NONRES	0 if not completed Nonresident Phase I JPME 1 if completed Nonresident Phase I JPME
PHIIONLY	0 if not completed Phase II JPME at AFSC after June 1990 1 if completed Phase II JPME at AFSC after June 1990
BOTHINT	0 if not completed Phase I/II JPME at AFSC before June 1990 1 if completed Phase I/II JPME at AFSC before June 1990
BOTHSR	0 if not completed Phase I/II JPME at NWC or ICAF 1 if completed Phase I/II JPME at NWC or ICAF
EQUIV	0 if not granted Phase I credit for completion of FEF or Foreign 1 if granted Phase I credit for completion of FEF or Foreign
JDA	0 if not completed assignment on JDAL 1 if completed assignment on JDAL

APPENDIX P. SPREADSHEET CALCULATIONS FOR O-5 MARGINALS

<i>VARIABLE</i>	<i>X</i>	<i>OLS MARGINAL</i>	<i>X*MARGINAL</i>	<i>LOGIT</i>	<i>X*LOGIT</i>	<i>LOGIT MARGINAL</i>
INTERCEPT	1	1.212259	1.212259	3.5519	3.5519	-
MARRIED	0	0.091619	0	0.4597	0	0.090801587
AGE01	22.9932302	-0.034718	-0.798279	-0.1719	-3.9525363	-0.033954302
UGRDTECH	0	-0.045054	0	-0.2447	0	-0.048334019
APC1	2.4775254	-0.024489	-0.06067212	-0.1319	-0.3267856	-0.026053359
APC2	2.99776373	-0.005016	-0.015036783	-0.0279	-0.0836376	-0.005510908
APC3	3.5493437	-0.008991	-0.031912149	-0.0504	-0.1788869	-0.009955188
RAPPED12	0	0.197986	0	1.0655	0	0.210461368
RAPPED3	0	0.210826	0	0.9927	0	0.196081652
NIGHTSCHL	0	0.039989	0	0.2144	0	0.042349054
SALVEREG	0	0.119458	0	0.6667	0	0.131688967
NWCDEGR	0	0.087181	0	0.4734	0	0.09350766
FFUNDNPS	0	0.08034	0	0.479	0	0.094613792
FFUNDCIV	0	0.086528	0	0.4798	0	0.094771811
UTILIZE	0	-0.107274	0	-0.5942	0	-0.117368508
ANYJPME	0	0.015557	0	0.082	0	0.016196933
JDA	0	-0.054093	0	-0.2859	0	-0.05647199
NUC	0	0.070796	0	0.4194	0	0.082841387
PIL	0	0.082801	0	0.4323	0	0.085389441
NFO	0	-0.024529	0	-0.1044	0	-0.020621461
		P =	0.306359	Z =	-0.989946	
				P =	0.2709227	

SOURCE: DR. William Bowman, U.S. Naval Academy

Date		Description		Amount	
1890	Jan 1	Balance		100.00	
	Feb 1	Interest		5.00	
	Mar 1	Interest		5.00	
	Apr 1	Interest		5.00	
	May 1	Interest		5.00	
	Jun 1	Interest		5.00	
	Jul 1	Interest		5.00	
	Aug 1	Interest		5.00	
	Sep 1	Interest		5.00	
	Oct 1	Interest		5.00	
	Nov 1	Interest		5.00	
	Dec 1	Interest		5.00	
1891	Jan 1	Balance		100.00	
	Feb 1	Interest		5.00	
	Mar 1	Interest		5.00	
	Apr 1	Interest		5.00	
	May 1	Interest		5.00	
	Jun 1	Interest		5.00	
	Jul 1	Interest		5.00	
	Aug 1	Interest		5.00	
	Sep 1	Interest		5.00	
	Oct 1	Interest		5.00	
	Nov 1	Interest		5.00	
	Dec 1	Interest		5.00	
1892	Jan 1	Balance		100.00	
	Feb 1	Interest		5.00	
	Mar 1	Interest		5.00	
	Apr 1	Interest		5.00	
	May 1	Interest		5.00	
	Jun 1	Interest		5.00	
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	Aug 1	Interest		5.00	
	Sep 1	Interest		5.00	
	Oct 1	Interest		5.00	
	Nov 1	Interest		5.00	
	Dec 1	Interest		5.00	

APPENDIX Q. SPREADSHEET CALCULATIONS FOR O-6 MARGINALS

<i>VARIABLE</i>	<i>X</i>	<i>OLS MARGINAL</i>	<i>X*MARGINAL</i>	<i>LOGIT</i>	<i>X*LOGIT</i>	<i>LOGIT MARGINAL</i>
INTERCEPT	1	1.761767	1.761767	5.9716	5.9716	-
MARRIED	0	0.140921	0	0.6313	0	0.13066827
AGEO1	22.3344371	-0.018	-0.40202	-0.0845	-1.8872599	-0.01749005
UGRDTECH	0	-0.021592	0	-0.0965	0	-0.019973845
APC1	3.7777778	-0.027365	-0.103378889	-0.127	-0.4797778	-0.026286821
APC2	3.1215805	-0.013908	-0.043414942	-0.065	-0.2029027	-0.013453885
APC3	3.5439598	0.006726	0.023836674	0.0328	0.11624188	0.006789037
RAPPED12	0	0.11461	0	0.5409	0	0.111957021
RAPPED3	0	0.113082	0	0.5082	0	0.105188682
TIMEO4	5.8535769	-0.15896	-0.930484584	-0.7518	-4.4007191	-0.155609703
ANYGRAD	0	0.019168	0	0.0841	0	0.017407257
UTILIZE	0	-0.054516	0	-0.244	0	-0.050503814
INTRES	0	0.085429	0	0.3757	0	0.077763455
SRRES	0	0.171647	0	0.7837	0	0.162212456
NONRES	0	-0.11402	0	-0.5122	0	-0.106016613
PHIIONLY	0	0.175603	0	1.0215	0	0.211432976
BOTHINT	0	-0.000431	0	-0.00207	0	-0.000428454
BOTHSR	0	0.192268	0	0.8927	0	0.184773586
EQUIV	0	0.083093	0	0.3925	0	0.081240767
JDA	0	-0.159456	0	-0.7245	0	-0.149959071
NUC	0	0.109513	0	0.4911	0	0.101649275
PIL	0	-0.000802	0	0.00103	0	0.000213192
NFO	0	-0.150983	0	-0.6807	0	-0.140893223
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				P =	0.2925942	

SOURCE: DR. William Bowman, U.S. Naval Academy

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